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## THE EOSINOPHIL RESPONSE TO ACTH IN THE MANIC PHASE OF MANIC DEPRESSIVE PSYCHOSIS\*

H. E. Lehmann, M.D., M. Turski, M.D. and  
R. A. Cleghorn, M.D.

Montreal, Que.

SOON after the intensive search for the therapeutic action of cortisone and ACTH had started a number of investigators noted that these hormones frequently produced a state of increased well-being which in certain cases reached a degree of marked euphoria.<sup>1 to 7</sup> This suggested that a pathological mood change in the direction of manic disturbances might be induced by a high concentration of adrenocortical hormones in the organism. A few cases of hypomanic or fully developed manic conditions were observed which either subsided spontaneously when the hormone was withdrawn or responded to electroconvulsive therapy.<sup>3, 7</sup> Out of this and certain observations in Addison's disease has arisen the assumption that an increased secretion of adrenocortical hormones will generally produce euphoric excitement. An obvious corollary arising from this working hypothesis would be that decrease of these substances might lead to dysphoric inhibition. In other words the question raised is whether conditions of psychotic depression may be due to functional insufficiency of the adrenal cortex. One of the authors has tested this thesis with substantially negative results. The results of his investigation have been reported elsewhere.<sup>8</sup>

Thorough and convincing studies of the rôle the adrenal cortex plays in a person's response to stress or to hormonal stimulation of its activity by ACTH have been reported for

schizophrenic patients by Pincus and Hoagland,<sup>9</sup> for psychoneurotic individuals by Cleghorn and Graham,<sup>10</sup> and for non-pathological control subjects by both groups. Pincus and Hoagland found that the basal output of adrenocortical hormone derivatives might not be significantly different in the schizophrenic and in the control subjects. However, the psychotic group varied significantly from the controls in their response to stress showing a reduced reactivity. This implies a defect at hypothalamic, pituitary or adrenal levels. The crucial test, an injection of pituitary adrenocorticotrophic hormone, indicated a defect at the level of the adrenal for it produced an increased output of adrenocortical substances in the control subjects, but failed to do so in 72% of the psychotic patients. These schizophrenics were mostly chronic cases. Parsons, Gildea *et al.*<sup>11</sup> in what would seem to be a comparable group found evidence of adrenal activation with epinephrine, insulin, and electroshock. The apparent contradiction in these results is at least partially explained by Pincus and Hoagland<sup>9</sup> as due to differences in the type of test. Cleghorn and Graham<sup>10</sup> demonstrated that individuals suffering from anxiety neurosis react at least qualitatively like control subjects to stress and ACTH. They all showed that the magnitude of the neurotic patient's adrenal response to stress seems to be related to the degree of anxiety existing in this individual.

In our investigation we have attempted to gain some insight into the function of the adrenal cortex in the manic state. More particularly we wanted to test the hypothesis that manic conditions are caused by or associated with heightened activity of the adrenal cortex.

*Material.*—Our material consisted of 10 manic-depressive patients. All of them were in the acutely manic phase. Only "clear cut" and typical cases who had suffered at least one previous attack and who presented no diag-

\* From the Verdun Protestant Hospital, Montreal.

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nostic problem were studied. None had received insulin, or electroconvulsive therapy for at least three months prior to the test. Most of them, however, had received sedation and modified insulin therapy for several days or weeks.

It may be noted that manic-depressive patients if in the *same* affective phase represent a remarkably uniform psychiatric group because of their constitutional, characterological, and symptomatological similarity as well as their similar clinical course.

*Method.*—There are many links and junctions which may be attacked in the complex cycle which is involved in man's adrenocortical activity. Emotional stress such as evoked by frustration, rage, fear, etc., affects first the hypothalamus. Hypothalamic stimulation is transmitted to the pituitary. The pituitary responds with secretion of the adrenocorticotrophic hormone (ACTH) which in turn stimulates the adrenal cortex to release its own hormones, some or one of which have cortisone-like activity. The hormones of the adrenal cortex finally produce their effect on the various target organs, in particular, the lymphoid tissue, but also on brain and muscles probably through their effect on carbohydrate and on sodium and potassium metabolism. We may short-circuit this cycle at different points, but if we want to test the functional capacity of the adrenal cortex directly, we must inject adrenocorticotrophic hormone. We have used this method.

Eight patients were injected with 25 mgm. of ACTH (Armour) and two patients received 16 mgm. of ACTH while they were fasting and kept as quiet as possible. No sedative was administered during the test and within a period of at least eight hours prior to it. The ACTH was dissolved in 5 c.c. normal saline solution and injected intramuscularly.

*Index of adrenocortical activity.*—The great variety of indices of adrenocortical activity which are now available make the interpretation of findings a matter of time-consuming, expensive, and confusing effort. The different data derived from the analysis of metabolites excreted in the urine and the changes in the lymphocyte and eosinophil count have been combined by some workers into cumulative or total response indices. We have restricted our-

selves to the eosinophil count as a single index of adrenocortical activity.

Roche, Thorn, and Hills<sup>12</sup> have recently published their findings with this method, *i.e.*, the injection of 25 mgm. of ACTH and the observation of the resulting change in the eosinophil count in patients undergoing major surgery. According to them the reduction of the eosinophil level of at least 50% four hours after the injection of 25 mgm. of ACTH is indicative of normal functional reserve of the adrenal cortex. They point out that a single count is of little value but that changes of the eosinophil count occurring with time or in response to different stimuli can throw considerable light on the fluctuations of adrenocortical activity.

TABLE I.  
PERCENT REDUCTION OF EOSINOPHIL COUNT FOLLOWING  
INJECTION OF ACTH

Basal eosinophil level (cells per c.mm.)		2 hours	4 hours	6 hours
ACTH 25 mgm.				
R.W.....	178	34%	9%	7%
M.V.....	128	80%	87%	40%
M.B.....	448	17%	54%	49%
A.J.....	108	46%	67%	91%
J.R.....	227	42%	69%	82%
H.B.....	106	20%	51%	25%
L.Ro.....	83	31%	57%	54%
G.W.....	172	20%	71%	66%
ACTH 16 mgm.				
M.D.....	115	30%	11%	-3%
L.Ri.....	128	20%	68%	85%

We have counted the eosinophils immediately before the injection of ACTH and two, four, and six hours later. Capillary blood and a phloxine-propylene-glycol stain was used.

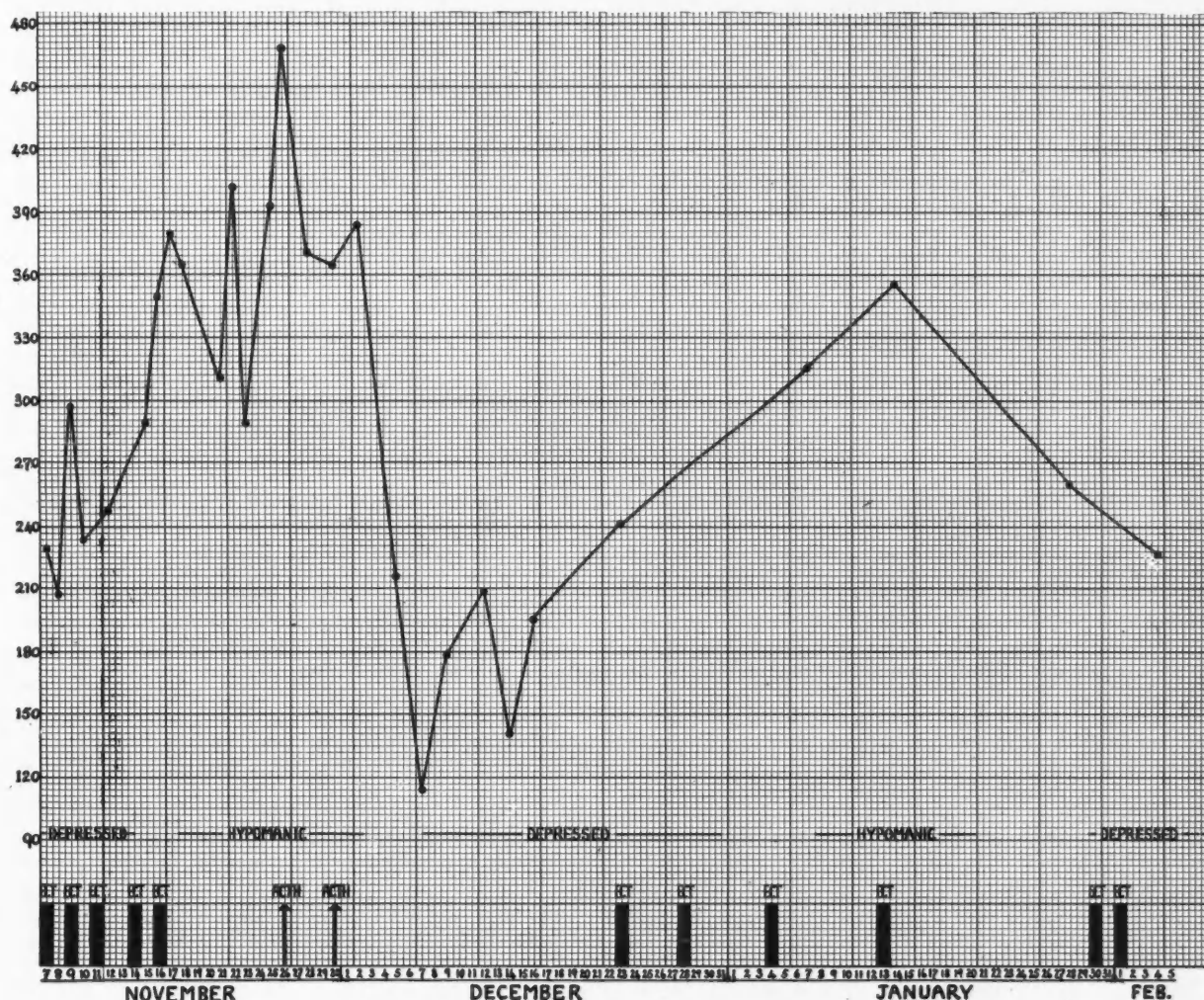
*Results.*—The average basal eosinophil level of our ten manic patients was 169 cells per c.mm. (range 83 to 448). Roche and his co-workers found 180 cells per c.mm. as an average basal value in their controls. They considered this value to be indicative of normal adrenocortical activity. It may be mentioned here that ten acutely psychotic but otherwise unselected patients in our hospital gave an average basal eosinophil count of 184 cells (range 34 to 484). Thus, the basal adrenocortical activity of non-psychotic controls, of a mixed group of psychotic patients and of a group of manic patients cluster around the same value, at least insofar as it is reflected in the resting eosinophil count.



The changes of the eosinophil level produced by the injection of the pituitary adrenocorticotrophic hormone are recorded in Table I. The eight patients who received 25 mgm. of ACTH responded with a fall of the eosinophil count of 50% or more after four hours, with one exception. The average reduction was 54% (range 9 to 87%). Of the two patients receiving 16 mgm. of ACTH only one gave a reduction of the eosinophil count of more than 50%.

manic conditions. Incidentally, this patient relapsed within a week after withdrawal of cortisone.

A patient whose eosinophil count we followed for a period of three months alternated during this period repeatedly between depressed and hypomanic conditions. The hypomanic state every time was the therapeutic result of several electroconvulsive treatments which had been administered when the patient was depressed.



Eosinophil levels at different phases of circular psychosis.

\* We have recently completed observation of a manic patient during a period of cortisone administration; 1,600 mgm. of cortisone were given in 14 days. The patient showed marked clinical improvement during this period. While it cannot be ascertained that this improvement was due to the cortisone, the fact that improvement did take place while cortisone in adequate doses was administered represents at least additional evidence against the assumption that an increase of adrenocortical hormones as such is a causative factor in the development of

Graph 1 gives a picture of the fluctuation in the eosinophil count during the three months' period. The eosinophil level rises steadily during the period of electroconvulsive therapy. It remains at a high level for about two weeks. During this time the patient was euphoric, argumentative, and mildly over-active. An injection of 16 mgm. of ACTH at this time, i.e., while the basal eosinophil count was high (467 cells per c.mm.) and the clinical condition resembled a hypomanic state, showed that the adrenal cortex was almost refractory to stimu-

lation. Two days later 32 mgm. of ACTH were injected and the adrenocortical responsiveness was still greatly impaired. There was a reduction of only 21% of the eosinophil count at four hours after the injection of ACTH. One week after this test, however, we observed a sudden and unexplained drop of the eosinophils, the next day the count went further down and simultaneously we noted that the patient was relapsing into a depression. Another course of electroconvulsive therapy lifted the patient out of the depression and brought the eosinophil level up. When the patient relapsed once more into a depressed state the eosinophil count again began to drop.

#### DISCUSSION

In the case of the manic-depressive psychosis followed over a three month period there is the unexplained fact that the occurrence of the patient's depression was consistently associated with a reduction of the eosinophil level which may be due to increased adrenocortical activity or some other unknown influence affecting the production or destruction of the eosinophils. During the hypomanic state which was induced by electroconvulsive treatments there was a high basal eosinophil level and greatly impaired responsiveness to two injections of ACTH. This can be interpreted as due to a resting state of the adrenal cortex.

Time relationships between electroconvulsive therapy and the eosinophil level may be involved. A number of workers have shown that this type of treatment activates the adrenal cortex<sup>11, 13, 14, 15</sup> and one would consequently expect a decrease in the eosinophil level. Our counts were always made at least twenty-four hours after the electrically produced convulsion and after this interval a rise instead of a fall in the eosinophil level may be observed. Similarly Roche, Thorn, and Hills in their surgical patients at first observed a marked reduction of the eosinophils immediately following a major operation, but three days later the counts rose and often exceeded the initial levels. Simultaneously the patients began to feel better; the stress over, the adrenal cortex went into a state of relative inactivity. This may well have been the case with our patient.

Our investigation has produced no evidence that manic states are regularly or even commonly associated with an increased release of

adrenocortical hormones. The average basal eosinophil level in manic states reflected approximately normal adrenocortical activity. Two of our ten subjects had comparatively high counts (227 and 448 respectively) suggesting a lowered out-put of adrenocortical hormones. The average reduction of the eosinophil count following the injection of ACTH was close to the lower limit of normal response.

With regard to the euphoria which has been observed in a number of patients receiving ACTH or cortisone it should not be forgotten that a great number of agents which are influencing metabolism, from alcohol to vitamins, may produce euphoria in varying degrees. Furthermore, idiopathic reactions with manic manifestations in response to certain drugs are not uncommon.

#### SUMMARY

1. The average basal eosinophil level of ten manic-depressive patients in the manic phase was within the normal range.
2. The average response to ACTH as reflected in the fall of the eosinophil count following an injection of ACTH in these manic patients was well within the normal range.
3. A manic patient treated with cortisone for two weeks improved clinically and relapsed later.
4. A patient treated with electroconvulsive treatments showed increased adrenocortical activity as signified by the eosinophil count during the depressed phase and reduced adrenocortical activity when hypomanic.
5. No evidence has been found in this investigation to support the thesis that there exists a specific relationship between increased adrenocortical activity and manic states whether occurring spontaneously or in response to electroconvulsive therapy.
6. A manic state is not inconsistent with a reduction of adrenocortical reactivity.

We are indebted to Dr. John R. Mote of the Armour Company for the ACTH used in this study.

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### A STUDY OF THE EFFECT OF THE PITUITARY ACTH IN DEPRESSED PATIENTS\*

R. A. Cleghorn, M.D., B. F. Graham, M.D.,  
M. Saffran, Ph.D. and D. E. Cameron, M.D.

Montreal, Que.

PUBLISHED articles on the effects of ACTH have aroused psychiatric interest because of their reports of positive mood changes in patients with rheumatoid arthritis<sup>1, 2, 3</sup> and other diseases with obvious lesions.<sup>4, 5, 6, 7</sup> The mildest of these mood changes is euphoria and the most extreme, mania.<sup>3, 7</sup> These are new and striking findings but there are other, earlier lines of evidence which indicate, though they do not prove, that changes in adrenal cortical function may alter psychological states. For example, clinical observations have shown that deviations in personality may be associated with adrenal cortical hyperfunction.<sup>8 to 11</sup> On the other hand certain patients with Addison's or with Simmond's disease exhibit changes in personality of a depressive nature.<sup>8, 12</sup> They are apathetic, negativistic and querulous. These deviations do not constantly occur in these adrenal disease states and there is no way of saying at present to what extent hormone excesses or deficits are responsible for the changes in these two extremes of

function when they occur. The evidence is suggestive only, of a causal relationship between altered hormonal states and mood. Indeed, there is an alternative explanation, for the gross alterations in bodily configuration, on the one hand, and the extreme debilitation on the other, might be sufficient reason for mood changes. By the same token it has been suggested that in arthritides the relief from pain and the facilitation of movement so quickly following ACTH treatment are sufficient explanation for the development of an euphoric state. However, similar mood changes have been described as occurring in less disfiguring diseases, e.g., pneumonia,<sup>4</sup> ulcerative colitis;<sup>7</sup> this suggests that the mood change in arthritis is dependent on something more than relief from the crippling disease.

Another type of evidence which supports the suggestion that increased adrenal cortical function leads to heightened affect comes from the use of cortisone in the treatment of adrenal insufficiency. In Simmond's disease Forsham<sup>13</sup> reported the restoration of a dull vegetable of a person to her former active life and Thorn<sup>14</sup> and Browne<sup>15</sup> have spoken of the marked improvement in mood effected by this agent in Addison's disease. The evidence therefore seems fair that certain adrenal cortical hormones influence mood.

If it is assumed that depression is the opposite of mania, then, because of the depression-like state in adrenal insufficiency, one may speculate that ACTH would improve other clinical conditions exhibiting conspicuous depression. This hypothesis is in keeping with the suggestion of Hemphill and Reiss<sup>16</sup> who suggested in 1942 that the beneficial effect of electroconvulsive therapy was due to adrenal cortical activation, a view which received some support from their use of an adrenocorticotrophic hormone in patients.<sup>17</sup> Because of these considerations it seemed desirable, when facilities and materials became available, to determine just how definite and specific an effect adrenocortical activity might have on clinical depression. As the supply of ACTH was limited, it was important to learn as much as possible from each case and to make the assessment of mood as definite and objective as possible. The program of investigation was designed therefore to include thorough clinical, psychological, psycho-physiological and biochemical studies of a group of patients in

\* From the Allan Memorial Institute of Psychiatry, and the Department of Psychiatry, McGill University.

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whom depression was an outstanding feature. After the usual clinical history and examination the following plan was carried out:

Day 1, a.m.—Recorded interview with synchronous recording of muscle potential from arm, neck and forehead. Pain test according to the technique described by Malmö and Shagass.<sup>18</sup> This includes record of finger tremor, neck muscle and forehead tension, heart rate and respiratory rate variability.

p.m.—Electroencephalogram.

Day 2, a.m.—Psychological tests: (a) vocabulary, digit span, and block design, subtests from Wechsler-Bellevue intelligence scale (for I.Q. estimate); (b) figure drawings with mood ratings; (c) handwriting sample; (d) Rorschach (for diagnosis); (e) level of aspiration; (f) katogram; and (g) Szondi.

p.m.—Movie, to provide a permanent, communicable record of the patient's appearance and activity before (and after) treatment. Other studies included blood sugar and urinary ketosteroids, corticoids, uric acid/creatinine ratio, as well as white blood counts.

Days, 3-9.—Treatment with ACTH.

Days, 8-9.—Retest in same order as on Days 2 and 3.

*Type of case.*—To date eight cases have been studied in this fashion. All showed clinical signs of depression, but the group cannot be called homogeneous, for there was a rather random distribution of other features including anxiety, agitation and psychotic delusions; four of the six women seemed to be in the early involution period, and one had had a fairly recent confinement.

*ACTH administration.*—The ACTH was given in divided doses every four hours day and night, a total of about 100 mgm. was injected on each of the first few days, and somewhat less on subsequent days, until a total of about 500 to 700 mgm. had been given.

## RESULTS

1. *Biochemical.*—In all subjects there occurred the usual changes in blood and urine constituents which are associated with increased activation of the adrenal cortex.<sup>19</sup> There was an increase in the number of circulating neutrophils, and a decrease in lymphocytes and eosinophils. The last practically disappeared from the blood. There was gradual retention of fluid with increase in weight, sometimes of marked degree, in keeping with the hæmatocrit decrease. The (fasting) blood sugar level increased. In some there was a slight, but not sustained increase in blood pressure. The excretion of uric acid, 17-ketosteroids, and corticoids (neutral reducing lipids) increased, the gain in steroid excretion being particularly marked. These findings indicate that the adrenal cortex was stimulated to a marked and sustained degree.

All these changes reverted to or below the pretreatment level rather promptly after the ACTH was stopped. This swing beyond the pretreatment level in some of the cases raises the suspicion that the exogenous ACTH and the consequent adrenal cortical hormone production caused some depression of the endogenous production of ACTH and that this depression of the pituitary continued for a short time after cessation of treatment, a point of view supported by observations of Forsham *et al.*<sup>20</sup>

2. *Psychophysiological.*—Objective studies on muscular tension were carried out using the standard pain stress test as outlined by Malmö and Shagass. The amount of data derived is very large and analysis has not yet been completed. At the present time it is possible to say from inspection of the records that there seem to be two trends following treatment with ACTH: (1) The sensation of pain was signalled more frequently by pressing the signal button; and (2) the record of the muscle potentials from the signalling arm stood out above the record for the other arm, forehead, and the neck more conspicuously, on the retest. Development of slow wave changes in the EEG as reported by others<sup>21</sup> was seen in one case only.

3. *Psychological.*—Some of the tests were too poorly performed by some of the patients to admit valid comparison. In most of the others no significant change was observed between the pre- and post-treatment data. Only the katogram (mirror drawing) showed a trend; in three cases this was performed more poorly on retesting, suggesting an increase in tension.

4. *Clinical.*—The six women and two men treated with ACTH were suffering, on admission, from depressive reactions, with varying degrees of motor retardation. In most cases there was some anxiety, and this was prominent in one. But in all the outstanding feature was depression, with inhibition, loss of concentration, and, in one, delusions.

Some showed a mild to moderate degree of improvement, which first set in 24 to 36 hours after commencing administration of ACTH. This usually took the form of increased freedom of movement, and greater interest in the surroundings; this then passed on to a slow subsiding of the delusional ideas, where these had been present. There was some increase in activity and participation, the patients beginning to show an ability to concentrate which allowed a few of them to read and to play

cards. Smiling usually appeared about the second or third day. Some showed an improvement in sleep. There was a rapid increase in weight related to water retention, although there was also some gain in appetite. The last index to shift was usually the patient's own report, for most of them remained unwilling to describe themselves as improved despite the fact that such improvement was discernible to some observers.

When the drug was stopped, any improvement noted regressed in much the same course and at much the same speed, the patient beginning to show signs of fading out of the more cheerful mood about 24 hours after cessation of the drug administration and disappearing entirely by the end of the third or fourth day. Those cases in which electroconvulsive therapy would have seemed the treatment of choice prior to the ACTH injections all required it after the ACTH was stopped, and in most there was conspicuous clinical benefit from this change in treatment in contrast to the slight and at times transient improvement while receiving ACTH.

#### DISCUSSION

Since the suggestion of Hemphill and Reiss in 1942<sup>16, 17</sup> it has been shown by a number of workers<sup>22, 23, 24</sup> including ourselves<sup>25</sup> that ECT activates the adrenal cortex. On the basis of the evidence of improvement in mood accompanying certain disease states discussed in the introduction it might be thought that ECT causes its beneficial effect in depression by the increasing adreno-cortical activity. This now seems to be improbable, for the degree of activation of the adrenal cortex evoked in the present experiments by ACTH was considerably in excess of that produced by ECT to which these cases later responded. Of course it may be argued that the adrenal stimulation was excessive and the optimal level was exceeded and a detrimental range encountered. It might also be noted that ECT provides a severe, but brief, stimulation of endogenous ACTH, only a few times per week, while our injections provided frequent, almost continuous, stimulation of the adrenal cortex.

#### SUMMARY

Eight cases showing signs of depression were treated for seven days, or more, with multiple daily injections of ACTH. Biochemical data

showed that this provided a sustained activation of the adrenal cortex over this period. Clinical signs of slight improvement in mood were apparent a day or two after starting treatment in some cases, but no evidence of psychological or physiological change of significance except for a possible increase in tension, was observed by the tests utilized. Most of the cases subsequently improved with electroconvulsive therapy.

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### A MEDICAL ACCOUNT OF THE RED RIVER FLOOD—1950

Gordon S. Fahrni, M.D. and  
Lieut.-Col. G. L. Morgan Smith, R.C.A.M.C.

Winnipeg, Man.

THE Red River flows north to Lake Winnipeg after draining a large area of Minnesota, the Dakotas and Southern Manitoba. At Winnipeg it is joined by its largest tributary, the Assiniboine, which contributes (from south-eastern Saskatchewan and south-western Manitoba) part of the water passing through the city.



The drop in the river is very gradual, as a large part of the drainage basin is through the flat area that was once covered by glacial Lake Agassiz. This explains the difficulty in diking, as a small rise in the river level anywhere will overflow a very large area.

A combination of late fall rains and heavy snow during the winter was followed by a late quick spring this year. The volume of water proved to be too great for the meandering Red to handle, and late in April it began to overreach its banks in the south. The towns of Emerson and Morris and the intervening farm lands were flooded early, and citizens of Winnipeg in the low lying areas became apprehensive. Diking operations were commenced, but people generally hoped that conditions would be no worse than in 1948. It was realized that back in 1826 there was a flood of such dimensions that almost the whole of Winnipeg had been inundated. Again in 1852 and 1861 there had been floods that were more severe than the 1950 peak. These, however, were only memories in the minds of the oldest inhabitants.

In the early hours of May 6 the dike protecting the civic group of hospitals suddenly weakened and began to spill water into the hospital grounds. The situation had so worsened a few hours earlier that the Government asked the Army to take charge of the co-ordination of all flood control and the first task given the Royal Canadian Army Medical Corps was to assist in the clearing of patients from these hospitals.

The superintendent of the civic hospitals had been able to discharge many of the ambulant tuberculosis cases to their homes and arranged transport through volunteer drivers of private cars. Army and Royal Canadian Air Force ambulances were used for the stretcher cases, some 34 of whom were cleared to an empty wing in Deer Lodge Hospital. The last cases in a three ton ambulance found themselves stranded in three feet of water in what had been a dry road in front of the hospital a few hours previously. Fortunately a lorry carrying extra stretchers and blankets was able to throw them a line and tow them across the water.

So little warning was there of this catastrophe that two iron lung cases and a group of Eskimos with poliomyelitis paralysis had to be left behind. The superintendent was not able to find beds for them elsewhere in the middle of the night, as other hospitals were at their normal

peak occupancy. The eventual clearance of these cases was carried out by the Royal Canadian Navy. This proved to be such a difficult task, with the craft navigating past submerged vehicles and traffic signs, that future evacuations of hospitals were as much as possible arranged ahead of anticipated danger.

During the succeeding two days it was necessary to move the patients from a number of flooded nursing homes. In addition the patients in St. Boniface General Hospital, the second largest in the city, were transferred to other hospitals. This hospital was on the river bank, protected by high dikes, but the engineers could not guarantee the safety of the buildings behind a wall of 15 feet of water. Moreover, by this time there were only two bridges open across the Red to Winnipeg, and one of these was only passable by having a large tractor tow a line of trucks across the low approaches.

On May 6 the city health officer called a meeting of city, provincial and army health officers and the public health aspects of the flood were raised. At this meeting the question of anti-typhoid inoculations was discussed. The general feeling was that the city water, milk and food supplies would be maintained in a safe condition for any likely maximum rise in the river and, accordingly, the risk of an outbreak of enteric disease was remote. On the other hand it was realized that large numbers of dike workers would be in some danger of infection, and many people were leaving the city for areas where the water supply was not easily controlled. For these reasons inoculation clinics were set up for citizens desiring preventive inoculation, although at no time was the public advised that this procedure was necessary.

The members who attended this meeting became the nucleus of the Committee on Public Health and Sanitation, which continued to function until rehabilitation was well advanced.

On May 8 it was evident that there was a great dislocation of the hospital accommodation in the city and the command medical officer requested the president of the Manitoba Hospital Association to convene a meeting of all hospital superintendents. Representatives from the medical branches of the province and city were also invited to attend. It was decided that as of that day all admissions to hospitals would be limited to strict emergencies. Daily bed states were to be telephoned twice daily to the medical



headquarters with a view to keeping close check on hospital occupancy, so that any requests for a bed could be referred to the hospital having the most empty beds. Agreements were reached on the employment of staffs for hospitals that had been closed. This committee was termed the Hospital Committee and met daily until the flood passed its peak.

On May 8 the Red Cross had drawn up a master plan to meet the challenge of what might be needed in the case of any further degree of evacuation. Dr. G. S. Fahrni was put in charge of the medical and nursing committee. After consultation with the command medical officer, Lieut.-Col. Morgan Smith, it was decided to convene at once a meeting of the representatives of organized medicine and nursing of the Province. On the evening of May 8 the following met to plan handling of the medical and nursing situation:

Dr. C. E. Donovan, Acting Deputy Minister, Department of Health and Public Welfare for Manitoba. Dr. Roper Cadham, Deputy Medical Health Officer, City of Winnipeg. Dr. D. L. Scott, President, Manitoba Medical Association. Dr. M. T. MacFarland, Secretary, Manitoba Medical Association and Registrar, College of Physicians and Surgeons of Manitoba. Dr. T. E. Holland, President, Winnipeg Medical Society. Dr. K. M. Johnson, President, Manitoba Dental Association. Dr. J. B. Rumberg, President, Winnipeg Dental Society. Dr. J. Orval Brown, Representing Winnipeg Dental Society. Dr. Owen C. Trainor, President, Manitoba Hospital Association and Medical Superintendent, Misericordia Hospital. Dr. H. Coppinger, Medical Superintendent, Winnipeg General Hospital. Dr. W. R. Dunlop, Medical Superintendent, Deer Lodge Hospital. Dr. W. Grant, Medical Superintendent, Children's Hospital. Brigadier Houghton, Medical Superintendent, Grace Hospital. Dr. Cecil Harris, Provincial Medical Director, Red Cross Blood Transfusion Service, Manitoba. Lieut.-Col. Morgan Smith, Command Medical Officer. Dr. G. S. Fahrni, Chairman, Red Cross Medical and Nursing Committee. Miss Helen Wilson, President, Manitoba Association of Registered Nurses. Miss L. E. Pettigrew, Secretary, Manitoba Association of Registered Nurses. Miss E. A. Russell, Director, Nursing Division, Department of Health and Public Welfare, Manitoba. Miss A. A. McKee, District Superintendent, Victorian Order of Nurses. Miss C. MacArthur, Assistant District Superintendent, Victorian Order of Nurses. Miss Ina Broadfoot, Director, Nursing Services, Manitoba Division, Canadian Red Cross Society.

After the flood situation and its challenge had been thoroughly discussed a committee of eight was appointed to organize this field of endeavour. This committee met the following morning. Dr. Gordon Fahrni was appointed chairman and Lieut.-Col. Morgan Smith assured the organization of the fullest assistance from the services. Two vice-chairmen were appointed, one in charge of medicine and one in charge of nursing which included nursing aides and orderlies.

From May 9 this committee assumed the overall planning and direction of medical and nursing requirements and the first-formed committees, such as hospitals and sanitation and public health, became in effect sub-committees of this body, the chairman of each sub-committee becoming a member of the master committee. It was also decided to form sub-committees for medical evacuation and medical supplies.

For convenience daily committee meetings were held in the Medical Arts Building and the permanent secretary of the Manitoba Medical Association, Dr. M. T. MacFarland, acted as secretary. Operational medical headquarters were established in the City Auditorium in space provided by the Red Cross Society, and the facilities of this organization were available whenever required for the medical services. Thus a "Medical and Nursing Desk" was established with telephone communications and Red Cross secretarial staffs, and this became the centre for all urgent medical requirements. The telephone number of this centre was published daily in the newspapers and over radio stations.

One of the first tasks of the personnel committee was to establish lists of volunteer professional workers for the numerous tasks required, such as manning the central desk, taking outside calls, examining evacuees, providing medical conducting parties for patients, staffing emergency hospitals in the city, supplementing staffs of outside hospitals and meeting medical needs of evacuees from flooded areas. The response was magnificent and over 200 doctors were on the lists for service. Adequate numbers of nurses, nurses' aides and orderlies were maintained, so that at no time was there a shortage of qualified assistance. Desks with doctors and nurses in attendance around the clock were set up in the C.P.R. and C.N.R. depots and infant feeding centres for evacuees were established.

The medical profession was kept informed of developments by letters sent out by authorized representatives. In addition a press representative was appointed and he cleared all medical releases in order that an accurate picture could be presented to the public. This representative held daily press conferences and spoke on several occasions over the radio. These releases had a reassuring effect on the general public in the face of heavy evacuation and kept them informed on health and sanitation matters where sewerage systems had broken down in flooded areas.

By May 14, as the flood worsened, the army made plans for a total disaster, as it was not known to what extent the river would rise. Although these plans were fortunately not required, their medical planner, Dr. R. W. Richardson, suggested a slight re-organization in the voluntary medical control group so that, in the event of inaugurating the total disaster plan, there would be no need for further organizational changes. Accordingly, the following voluntary control was evolved:

DIRECTOR OF MEDICAL SERVICES

Command Medical Officer

Deputies

Civilian Physician

Army Medical Officer

Press Representative

Committees: each with a civilian and army co-chairman, (1) medical care and personnel; (2) hospitals; (3) medical evacuation; (4) public health and sanitation; (5) supplies.

In effect the responsible civilian chairman carried on as before, with an army representative in each committee. The army medical officers were, for the most part, civilian practitioners in the city who had war time experience in the movement of patients and were therefore called up for duty in the Reserve Force.

As the flood progressed, it was found that nearly every hospital in the city had problems with water in the basement. All demands for pumps were centralized at Flood Control Headquarters and so great was the requirement for maintenance of the city utilities of power, sewerage and transport that the city and provincial engineers finally informed the command medical officer that only one hospital could be maintained. They guaranteed to keep this one in operation and stated that they would not be able to assist any other hospital. In order that patients could be cared for in the event of a power failure, they installed large generators.

The Winnipeg General Hospital was selected as the last bastion, as it was of sufficient capacity and on relatively high ground. It was then necessary to plan the orderly reduction in patient strength of all other hospitals, so that all patients in the city centre could be accommodated in the General Hospital. Deer Lodge Hospital in the western outskirts of the city also was kept in operation, as it was on higher ground and had a fairly sure escape

route for its patients via the airfield, less than half a mile distant.

The problem of finding sufficient beds outside the city was tackled vigorously by the Provincial Government. Rural hospitals in Manitoba were first used and finally large numbers of patients were sent to Saskatchewan, Alberta and the Lakehead. The generous response to Winnipeg's plight on the part of these outside hospitals is most gratefully acknowledged and the work of two of the senior medical members of the Health Departments of Saskatchewan and Alberta in co-ordinating the availability of beds in their provinces overcame a most difficult bottleneck.

Hospital and nursing home occupancy in Greater Winnipeg on May 1, 1950, was 4,121. This figure was reduced to 1,163 by May 20. The reduction was due to the rigid control of admissions, the discharge of many to their homes in the province, and to the evacuation of 1,424 patients to outside hospitals.

At the height of the flood the nursing home occupancy was reduced to about 10% of normal, and the Winnipeg General and Deer Lodge Hospitals were the only ones in the city operating fully. The following tables give a breakdown of the numbers and types of patients evacuated to rural Manitoba and adjacent provinces:

TABLE I.  
NUMBERS BY TYPES OF HOSPITAL

Nursing and Old Folks' Homes .....	740
Sanatoria (Tuberculosis) .....	207
Chronic DVA Patients .....	290
General Hospitals .....	187
	<hr/> 1,424

TABLE II.  
NUMBERS BY TYPES OF TRANSPORT

Train .....	1,037
Air .....	274
Ambulance .....	113
	<hr/> Total
	1,424

The evacuation was carried out by rail, air and ambulance car and on the whole worked very smoothly, although many of the early moves were made under great difficulties. The railways gave marvellous assistance and co-ordination was facilitated by the Red Cross establishment of a railway desk staffed by senior representatives of the C.P.R. and C.N.R.



It was found that loading and off-loading stretcher cases from standard Pullman cars could only be done, and that with difficulty, by taking out a complete window. The average city depot, moreover, does not lend itself to the transshipment of patients, and the most ideal situation was found only in one of the small depots which had a long platform providing easy access to ambulance cars along the length of the train.

The most satisfactory equipment proved to be baggage cars converted to ambulance coaches by the addition of single and double-decker beds. The large doors in these cars gave easy access, and this equipment was invaluable in returning patients from the rural Manitoba hospitals, each of which had relatively few patients.

Ambulance transportation proved to be very tiring for the patient due to the poor conditions of the rural roads, in many cases due to flooding. It was therefore only used on short hauls.

The air lift was simple to plan and to control. The Royal Canadian Air Force medical branch established an air evacuation centre on the airfield and this worked very efficiently. The patients were screened at this centre and those travelling by this means had a very comfortable trip. This method of travel was not used on the return journey.

There were 15 deaths while evacuated, mostly occurring in the elderly chronic cases. Death rates for the past year for Nursing and Old Folks' Homes in the city of Winnipeg alone were 17 a month, whereas half the group evacuated came from the city of St. Boniface. This discrepancy in the mortality rate of evacuees speaks highly for their care both during transportation and while guests of outside hospitals.

Although a major task proved to be the evacuation of the sick and ailing from hospitals and nursing homes to hospitals in rural Manitoba and neighbouring provinces, other pressing problems arose. There was the matter of caring for emergency needs in the mass of evacuees streaming from flooded rural areas to and through the city. To meet these needs medical posts were established at strategic sites. Infant shelter and feeding clinics were established, first aid posts for the dike workers, medical and nursing care for evacuees to

summer resorts and, at the central bureau, all emergency calls from the city were serviced.

When the flooded nursing homes were evacuated, a radio announcement was made, asking all flooded private homes to report any invalids they might have. The response to this appeal was amazing. A physician was sent to each such home. He assessed the invalids and when necessary advised them as to the hour the ambulance would arrive. These invalids were taken to a staging centre and later transported in groups to out-of-town refuges.

The dentists established mobile units that serviced evacuees in summer camp sites.

#### COMMENTS

*Records.*—The careful keeping of records was difficult, owing to the overloading of the hospital and nursing home clerical staffs. The importance of this was borne out by the large numbers of enquiries received. The Canadian Red Cross Society maintained a record department, and notified next of kin of all moves of patients.

*Hospital sites.*—It was notable that all the city hospitals were concentrated in such a small radius that none were out of danger had the water risen a further one to two feet. This concentration of hospitals is typical of the modern city, and might prove disastrous in time of war. It is suggested that a proportion of hospital beds in every city be built sufficiently far in the outskirts that bombing of the central area would not affect them.

#### THE AUXILIARY SERVICES

*Red Cross.*—The Red Cross once again proved to be a most useful organization in disaster. They were ideally equipped to provide an operating headquarters for the medical services, including the provision of furniture, typists and communications. They had sufficient resources to supply medical equipment and communications, and paid for all the special trains and busses required for the movement of patients. Their welfare organization was good, and they maintained a central record of moves of patients that proved to be invaluable. In addition to providing these services, this Society also furnished numbers of volunteer workers for medical purposes.

*St. John Ambulance.*—The St. John Ambulance Association was able to provide large numbers of well trained nurses' aides and



orderlies. These volunteer workers were uniformed on all occasions, a noteworthy contribution in that they were able to exercise control to a marked degree. They staffed first aid posts on the dikes, and provided conducting and reception parties throughout the evacuation and return of patients.

#### CONCLUSION

The experience of the Manitoba flood demonstrated once again the effect of an emergency in stimulating all concerned to exert their best efforts to meet the task at hand. A request or an order brought immediate response without question, from all. Services and civilian personnel showed no line of cleavage. The doctors were spontaneous in their response, the nurses magnificent in their co-operation and the lay aides were plentiful and efficient.

### GROUP PRACTICE AND MEDICAL EDUCATION\*

P. H. T. Thorlakson, M.D.†

Winnipeg, Man.

THE science and the practice of medicine are in a state of constant evolution. We have advanced far from the day when it was possible for a single doctor to contain within himself a wide enough knowledge and experience to enable him personally to treat all of his patients. These changing conditions have led doctors not only to specialize in the various fields of medicine and surgery but also to group themselves together in hospital and private practice.

Throughout this same period, methods of training medical students have evolved from a system of apprenticeship to the development of great medical schools. Today, at the end of a long course of training in the basic sciences and in clinical medicine and surgery the medical student graduates with a licence to practise. At this stage, however, he is a basic doctor with basic experience and in need of much further training in treatment of sick people. Generally, he has little contact with the larger group of patients, not hospitalized, who form the bulk of medical practice. A properly organized clinic, composed of men of high professional standing,

can be utilized as an important training ground, not only for men who wish to go into general practice but also for those who wish to specialize.

Dr. W. E. Gallie of Toronto stated the case very clearly in the Eighth Listerian Oration,<sup>1</sup> when he said:

"I cannot refrain from speculating a little in regard to the future. If I were a young man again and not committed to academic life, I would very seriously consider joining or organizing a clinic. Group practice offers so much both to the patient and to the surgeon that I feel sure it is here to stay. It, in reality, is the application to private practice of the system we use in the public wards of our teaching hospitals. This not only gives a full life to the staff but it provides without doubt the finest medicine and surgery for the patient."

The increasing complexity of modern medical practice has tended greatly to increase its cost. The advancement in medical science has made x-ray, laboratory and consultation facilities imperative to proper diagnosis and adequate treatment of many diseases. These involve not only costly equipment, but the employment of trained technicians. If these ancillary services are established in a clinic and employed by a relatively large number of doctors, the average cost can be reduced to the patient. Furthermore, it is not to be supposed that the use of a clinic organization composed of specialist services is necessarily expensive, for a considerable degree of consultation is available by discussion without adding much, if anything, to the cost of examination and investigation of patients. It is, indeed, the ready availability of consultation by discussion or examination which makes clinic practice so attractive to the individual doctor and so valuable to the patient.

#### THE WINNIPEG CLINIC GROUP PRACTICE PLAN

It was accepted by the founders that the Clinic should make a contribution to the medical education and research activities of the community in which it worked; and that the new members of the Clinic should be selected on the basis of their interest in teaching as well as in the practice of medicine. To attract younger men with advanced training but usually without private financial means, it was decided to eliminate, as far as possible, the financial complications which usually hamper development of a private medical group.

There are three main financial problems which beset a medical organization: (1) ownership of buildings and properties; (2) ownership of furniture, equipment and supplies; (3) distribution of annual income.

\* From an address delivered before the Montreal Medico-Chirurgical Society on Friday, December 16, 1949.

† Division of Surgery, Winnipeg Clinic, Winnipeg, Manitoba.

#### A. THE MANITOBA INSTITUTE FOR THE ADVANCEMENT OF MEDICAL EDUCATION AND RESEARCH

It was determined by the original associates of the Winnipeg Clinic that the physical assets of the new Clinic as represented by the property and building, should not become a part of their personal holdings. The deed of the property was transferred to the recently organized Manitoba Institute for the Advancement of Medical Education and Research. The membership of this Institute has broad community representation among business and professional men, including members from the Board of Governors of the University and the Faculty of Medicine of the University of Manitoba. The indebtedness involved in the construction of the Clinic is met through part of the earnings of the Clinic being turned over to the Institute in the form of rent, which, in turn, is used in meeting the interest and mortgage. With the amortization of this indebtedness, the money then received by the Institute from the Clinic will be used for the support of educational and research activities of the Faculty of Medicine of the University of Manitoba.

In addition, the Institute has received income from special gifts from members of the Institute and from members of the Clinic and their friends. Up to the present time, over \$50,000 from the Manitoba Institute has become available to the Faculty of Medicine of the University of Manitoba.

The following is a list of the modest beginnings this fund has permitted:

1. Initiating the formation of the Department of Medical Research in the Faculty of Medicine and the Winnipeg General Hospital. The Institute made the first offer of financial assistance of \$15,000.00 which encouraged the University of Manitoba to establish the Department.
2. Reimbursing the University for funds used in the construction of the first electroencephalograph in the Province for use in a teaching hospital.
3. Equipping the first constant temperature room and supplying apparatus which is being used for the investigation of peripheral vascular disease.
4. Supplying equipment for a machine shop for the construction of research apparatus for the Medical Faculty.
5. Providing two undergraduate research scholarships each year.
6. Establishing travelling bursaries to enable post-graduate students to visit other medical centres.
7. Supplying to the Children's Hospital of Winnipeg a small fund to assist a young man of promise to conduct further study into the pathology of Erythroblastosis.

In the future, substantially larger funds will become available. By this arrangement it is provided that the revenue from the building and property, paid for by the Clinic and donated to the Manitoba Institute, will accrue to the advantage of the medical education and research activities of the community and not become, as is usual, additional income through ownership to senior members of the Clinic.

Without the financial backing of a few generous private citizens who were interested in this undertaking and who were willing to supply the funds necessary for the second mortgage (the lesser security without interest), this special type of arrangement could not have materialized.

#### B. THE PURPOSE OF INCORPORATION

It was the early desire of the Clinic founders to share personal responsibility for the Clinic management and control with others who have joined the staff. To this end, an Act of Incorporation was drawn up as a private bill, submitted to the Manitoba Legislature and passed in March, 1949. This Act of Incorporation places the entire responsibility and authority for the Clinic on the members named in the Act and any others who may be added later. This ensures that every member will have a right to determine the policy of the Clinic and no individual or small group of individuals can in future take over the complete control of the Clinic.

The Act of Incorporation provides that the professional staff be made up of: (a) *Members*—consisting of men who are associated in a full-time professional capacity and who are elected to the Clinic as need arises and who share in the direction of the Clinic. (b) *Senior consultants*—members who have reached the age of sixty-five, at which time they give up membership but may continue in consultant status. (c) *Consultants, part-time*—qualified men such as radiologists who devote a portion of their time to the work within the Clinic. (d) *Associates*—those who are expected to become members and who must spend at least one year in this capacity before being eligible for membership. (e) *Fellows*—the group of younger doctors who join the Clinic in order to spend a year or more under the direction of the Clinic doctors, in order to prepare for practice elsewhere or as part of the time required for eligibility for Certification or Fellowship of the Royal College of Physicians and Surgeons of Canada. They assist in the general work of the group while they obtain the further experience they require. For these services, a very fair stipend is provided. It is realized that the medical course is long and that these men are relatively mature at this stage. Many have taken on the responsibility of marriage. To provide a proper living wage, which permits these men to meet their family obligations comfortably, is one way to encourage a high standard in the profession through post-graduate study. This group naturally contributes a great deal to the Clinic and this mutually advantageous arrangement is fundamental to the happy relationship which exists.

The Act of Incorporation provides that the Government of the Clinic be vested in an Executive Council. The Executive Council is elected annually from the members and consists of not more than nine. It meets monthly and concerns itself chiefly with matters of Clinic policy. To direct the services carried on within the Clinic, various sub-committees are formed. Since these are responsible to the Executive Council, the chairman of each is usually a member of the Council but otherwise it is made up of Clinic members and business personnel according to the need. In this way, practically every Clinic member is given responsibility and maintains an active interest. Examples of these sub-committees are: The Fiscal, the Education and Scientific, and the Administrative.

It should be pointed out and emphasized that the Executive Council with its committees determine only the overall policies and day-by-day operations as they effect all departments. Each section, such as pædiatrics, gynæcology and obstetrics, orthopædics, urology, and the various other divisions of medicine and surgery, which consists of three or more doctors with assistants, nurses and secretaries, is a complete unit. Each unit is encouraged to develop along its own lines with as much freedom as though in private practice. Each doctor retains his own clientele and makes references as he sees fit.

In private practice a doctor's income depends on the amount of work he is able to do as well as his ability to collect the charges made for these services. In the Winnipeg Clinic, other factors are taken into consideration. We believe that these factors help compensate for the reduced income because they allow a man to develop along lines which are natural and of particular interest to him. The factors which determine an individual's income depend upon the distributable net income of the group and the contribution he makes toward that income in a material way. However, some members will command large practices and will earn considerably more than others. The contribution of the latter, however, may be equally great to the success and the prestige of the Clinic. Such contributions may take the form of publications; his enthusiasm and originality of thought and his ability to advance his own specialty; the suggestions he may make to improve diagnostic and therapeutic efficiency; his willingness to co-operate with other members of the staff; his re-

lationship with the members of the medical profession outside the Clinic; or his position and prestige within the community.

We place as much, if not more, emphasis on a man's group value, as we do on his individual capacity and reputation. A man may have initiative, imagination and ability, all of which will advance his status in the Clinic, but with all this he must have tolerance and manifest a willingness to co-operate with his confrères. Whatever strength and success a clinic organization may possess of necessity depends upon the individual contribution of each of its members and associates to the organization as a whole.

#### C. CONTRIBUTION TO MEDICAL EDUCATION

It is not always possible to combine undergraduate teaching with a comprehensive postgraduate educational training program without the one gaining at the expense of the other. Medical schools and teaching hospitals are geared, properly, to the education and training of the undergraduate. Generally, there is neither accommodation nor time available to graft on this a complete and satisfactory postgraduate program of organized training and teaching.

In 1949 we celebrated the centenary of the birth of Sir William Osler, a great Canadian whose name and fame in medicine are so closely associated with McGill University. He was among the first to develop a proper concept of the needs of the postgraduate. Since his time, numerous centres of postgraduate education and training have been established in various parts of the world. Canada, however, has been somewhat lacking in keeping pace with developments elsewhere. This, of course, has not been through lack of appreciation of the necessities, but rather the result of the peculiarities of our situation. Canada is a sparsely populated country with widely scattered centres of medical education and outside the older and larger centres, such as Montreal and Toronto, there has been comparatively little provision for the training of the postgraduate. We have the mournful experience of witnessing the departure every year of many of the best of them to centres abroad from which some do not return. We have become exporters of talented men.

The advance of medicine has been such that today, if we are to do the best possible for every



graduate, a more prolonged training than would ever be available in existing centres and institutions is necessary. It is in this respect that a well organized, well staffed clinic can do a great personal and public service. Although most of the men staffing such a clinic in a teaching centre are already engaged in undergraduate training, their duties in this respect do not occupy the whole of their day. Membership in a group in no way need interfere with their undergraduate teaching activities, but it should permit a greater sharing of experience at the postgraduate level.

The Winnipeg Clinic has long had this problem under consideration and we now have in operation a plan which we consider takes care of the postgraduate who wishes to go into general practice. These men are appointed as Fellows for two years and, during this period, work in the divisions of medicine and surgery and in the departments of gynaecology and obstetrics, orthopaedics, urology and paediatrics.

In giving consideration to the development of a system of apprenticeship in preparation for general practice, it is with the firm opinion that the "family" doctor must continue to be the foundation stone of the whole structure of medical service.

We are about to put into operation another plan for the training of those who wish to go into specialized practice. These men are appointed for three years to the special department in which they wish to work (e.g., the division of surgery or medicine). At the end of two years, it is hoped to secure for them appointments in hospitals in Canada, in the United States or in England and during this period to continue their stipend or scholarship. It is important to emphasize that there is no restriction whatever on the individual as to his place of future practice.

There is one further aspect of postgraduate medical education which should not be overlooked. This is the continuation of our own education. The intimate association with one's peers and superiors in the varied branches of medicine which the clinic organization provides, is an educational process which, though painless, is highly efficient and a delightful experience. In the Winnipeg Clinic, this relationship has been further strengthened by regular clinical meetings so that all may share in the growing experience of each. As an aid to accumulation

of experience, we have provided a medical record service which besides allowing ready reference to individual case histories is so organized by a cross reference system that reference may be made to groups of cases displaying a similar sign or symptom.

Other educational activities organized by the Clinic for the professional personnel are:

1. *Publication of the "Winnipeg Clinic Quarterly"* which contains articles and case reports by members of the staff.

2. *Monthly Divisional Meetings* which are arranged by younger associate members of the staff in the form of symposia in which three or more Associates or Fellows prepare presentations, and senior members are invited to comment on the presentations and take part in the subsequent discussion.

3. *Semi-Monthly Clinical Radiological Conferences* which are prepared and presented by our Radiologists.

4. *Library service* is supplied to the staff. We subscribe to fifty-two medical journals, and have in our Clinic Library about three hundred up-to-date monographs for reference purposes.

#### SUMMARY

In conclusion, allow me to enumerate the factors which determine the measure of success that can be attained by any medical group: (1) the highest possible standards of scientific and professional attainment; (2) a good patient-doctor relationship; a sincere interest in people and their problems; (3) professional and business integrity; (4) a sound policy with regard to the control and ownership of accumulating assets and the distribution of annual income; (5) efficient and economical administration; (6) good professional and public relationships; (7) an active education program within the group; (8) provision for the support of medical education and research in the community; (9) confidence in the professional work of one's confrères; (10) sound planning for the future, remembering that the future belongs to the younger men of the group; (11) effective teamwork, with a great deal of give and take—mostly give; (12) the loyal co-operation of the entire staff, both medical and non-medical.

This list could well be accepted as the foundation of good group medical practice. Thus, group practice and medical education can be combined to provide patients with sound, practical, scientific, medical assistance at a reasonable and fair cost.

#### REFERENCE

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## RHEUMATOID ARTHRITIS

## II. Studies of Adrenocortical and Hypophyseal Function and the Effects Thereon of Testosterone and Pregnenolone Therapy\*

R. Palmer Howard, M.D.,  
Eleanor H. Venning, Ph.D. and  
Guy H. Fisk, M.D.

Montreal, Que.

THE clinical effects of injections of testosterone and pregnenolone in four men and six women with rheumatoid arthritis are reported in this issue of the Journal.<sup>1</sup> These patients were also studied by biochemical and endocrinological techniques to determine adreno-cortical and hypophyseal function before and during treatment.

Intramuscular injections of an aqueous suspension containing equal parts of crystalline testosterone and  $\Delta^5$ -pregnen-3( $\beta$ )-ol-20-one† were given daily. The particle size of the pregnenolone varied from 5  $\mu$  to 200  $\mu$ . Each pa-

in the fasting state. Blood sugar was estimated by a picric acid procedure.<sup>2</sup> Blood sugar time curves were done following the ingestion of 50 grams of glucose. Chemical estimations of 17-ketosteroids<sup>3\*</sup> and corticoids,<sup>4</sup> and biological assays of glycogenic corticoids<sup>5</sup> and gonadotrophins<sup>6</sup> were done using three or four day specimens of urine.

## RESULTS

The results of the biochemical analyses of blood samples before and during treatment are summarized in Table I. The levels of plasma chloride, plasma carbon dioxide combining power, serum phosphorus, serum calcium, fasting blood sugar and blood sugar after ingestion of glucose were essentially normal before therapy. None of these levels was significantly altered by therapy.

The results of estimations of urinary 17-ketosteroids, corticoids and gonadotrophins before and during treatment are summarized in Table II. 17-ketosteroids were abnormally low in each of the ten patients before treatment, treatment the 17-ketosteroid excretions were markedly increased, the mean value becoming 10.4 mgm. per day. Before treatment corti-

TABLE I.  
EFFECT OF DAILY INJECTIONS OF TESTOSTERONE-PREGNENOLONE ON BLOOD ELECTROLYTES AND BLOOD SUGAR  
TIME CURVES IN RHEUMATOID ARTHRITIS

	Normal values	Number of cases	Before treatment		During treatment (10th-14th day)	
			Range	Mean	Range	Mean
Plasma chloride (as NaCl) gm./100 c.c.	0.560 to 0.620	10	0.531 to 0.610	0.566	0.550 to 0.580	0.567
Plasma CO <sub>2</sub> c.p. (vols./100 c.c.)	50 to 70	6	43 to 51	47	45 to 54	49
Serum phosphorus mgm./100 c.c.	3.0 to 4.5	7	2.6 to 4.4	3.5	2.8 to 3.6	3.2
Serum calcium mgm./100 c.c.	9 to 11	5	8.1 to 9.1	8.5	8.3 to 9.2	8.8
Blood sugar (fasting) gm./100 c.c.	0.080 to 0.120	4	0.091 to 0.111	0.101	0.087 to 0.111	0.099
Blood sugar (peak of curve after glucose) gm./100 c.c.	Up to 0.180	4	0.145 to 0.208	0.173	0.169 to 0.212	0.189
Blood sugar (2 hrs. after glucose) gm./100 c.c.	Up to 0.120	4	0.087 to 0.133	0.110	0.075 to 0.178	0.127

tient received 200 mgm. of the mixture on the first day. Thereafter nine received 100 mgm. for thirteen days (total dose 750 mgm. of testosterone and 750 mgm. of pregnenolone in fourteen days). One patient received 200 mgm. daily.

*Methods.*—Standard methods were used to determine concentration of plasma chloride, plasma carbon dioxide combining power, serum phosphorus and serum calcium

coids by bioassay in nine patients and also by the chemical method in six were lower than normal.<sup>7,8</sup> These were not significantly altered by the treatment.

Urinary gonadotrophins (FSH) were studied in nine patients before treatment. FSH was present in amounts consistent with the ages of the patients with one exception in which it was absent. During treatment FSH excretion was reduced in five of six patients from normal the mean being 3.6 mgm. per day. During levels to absent, but in two elderly women the FSH excretion remained unchanged at a high level.

\* From the Departments of Metabolism, Medicine, and Physical Medicine of the Montreal General Hospital, and from the McGill University Clinic at the Royal Victoria Hospital.

This work was done with the aid of grants from Charles E. Frosst and Sons, Montreal, and the Banting Research Foundation.

† Supplied under the name "Bisterone" by Charles E. Frosst and Sons, Montreal, whose co-operation through Drs. E. Lozinski and A. D. Odell is acknowledged.

\* A correction factor to compensate for non-ketonic chromogens was applied.



# DISCUSSION

*Evidence of subnormal adreno-cortical function in rheumatoid arthritis.*—Although none of the patients showed clinical evidence of adrenal insufficiency, subnormal adreno-cortical function was indicated by low urinary excretions of corticoids and 17-ketosteroids. Low 17-ketosteroids have been frequently noted in chronic illness.<sup>9</sup> Similar results were found in the patients with rheumatoid arthritis reported by Hench, Kendall, Slocumb and Polley.<sup>10</sup>

One of us (E.H.V.) reported a high excretion of glycogenic corticoids in one patient with arthritis and pustular psoriasis.<sup>11</sup> However, in addition to those reported here, low excretions of corticoids were noted frequently in a larger series of patients with rheumatoid arthritis.<sup>12</sup>

Despite the apparently diminished adreno-

Therefore, the lack of effect of the combined testosterone-pregnenolone therapy on corticoid excretion is probably due to the fact that each of the component steroids is ineffective on corticoids at the period studied by us. On the other hand, it has been shown that treatment with testosterone propionate results in a lowering of corticoid excretion from previously high levels to normal.<sup>17</sup> Thus the possibility remains that the testosterone component of combined therapy exerts an antagonistic action to a stimulating effect of pregnenolone on corticoid excretion, but this alternative explanation of our findings appears unlikely.

# SUMMARY

1. Four men and six women with rheumatoid arthritis in various stages have been studied.

TABLE II.

EFFECT OF DAILY INJECTIONS OF TESTOSTERONE-PREGNENOLONE ON URINARY 17-KETOSTEROIDS, CORTICOIDS AND GONADOTROPHINS IN RHEUMATOID ARTHRITIS

	Normal values	Number of cases	Before treatment Range Mean	During treatment (10th-14th day) Range Mean
17-ketosteroids mgm./day	M. 5.6 to 15 F. 4.0 to 12	4 6	2.7 to 5.2 1.4 to 4.9	10.2 to 12.9 7.0 to 12.3
Corticoids (bioassay) glyc. u./day	M. 35 to 75 F. 25 to 60	3 6	21 to 32 <10 to 29	<10 to 34 <10 to 28
Corticoids (chemical) mgm./day	M. 0.400 to 0.700 F. 0.300 to 0.600	2 4	0.172 to 0.300 0.152 to 0.227	0.267 to 0.272 0.101 to 0.238
Gonadotrophins (FSH) per day	"Normal" but "high" in climacteric	9	1 absent 6 normal 2 high	1 still absent 5 absent, 1 normal 2 still high

cortical function in rheumatoid arthritis it is noteworthy that treatment with adreno-corticotrophic hormone is effective in stimulating cortical function, as indicated by a decrease of circulating blood eosinophils and an increase of 17-ketosteroids.<sup>13, 14</sup>

*Lack of enhancement in adreno-cortical function by this treatment.*—Selye has offered the hypothesis of the biogenesis of corticosterone from pregnenolone.<sup>15</sup> If this transformation occurs in man, the administration of pregnenolone might result in an increased excretion of corticoids. It is noteworthy that daily injections of 100 mgm. to 200 mgm. of pregnenolone alone do not lead to the classical adreno-cortical effect on circulating eosinophils.<sup>16\*</sup>

\* Eosinophil counts were not done in our cases. However, at a later date one patient received injections of pregnenolone alone, 100 mgm. daily for two weeks, and no effect on the excretion of corticoids was noted.

2. Although none showed clinical evidence of adrenal insufficiency, decreased adreno-cortical function was indicated by subnormal urinary excretions of corticoids and 17-ketosteroids.

3. Injections of aqueous suspensions of testosterone and  $\Delta^5$ -pregnen-3( $\beta$ )-ol-20-one (50 mgm. of each daily during two weeks) produced no significant changes in excretions of corticoids, serum electrolytes, or blood sugar time curves.

4. This treatment was accompanied by elevation of the urinary 17-ketosteroids in all patients and by suppression of the excretions of gonadotrophins (follicle stimulating hormone) in the majority. These changes may be attributed to the testosterone component of the treatment.

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## RHEUMATOID ARTHRITIS

### I. Clinical Effects of Testosterone and Pregnenolone Therapy\*

Guy H. Fisk, M.D., R. Palmer Howard, M.D. and  
Kevin Fay, M.D.

*Montreal, Que.*

THE purpose of the present study was to obtain information about the therapeutic value of testosterone and pregnenolone in rheumatoid arthritis. Hench, Kendall, Slocumb and Polley<sup>1</sup> reported remissions in this disease during treatment with a hormone of the adrenal cortex (17-hydroxy-11-dehydrocorticosterone; cortisone). In view of the cost and limited supply of this hormone it was hoped that other more readily available substitutes might prove effective. Ishmael, Hellbaum, Kuhn and Duffy<sup>2</sup> found that testosterone propionate in combination with estradiol esters and pregnenolone favourably influenced 81 out of 90 patients with rheumatoid arthritis and allied conditions.

*Plan of study and treatment.*—Four men and six women with rheumatoid arthritis were studied. Six were bed-ridden and four were ambulatory. Diagnoses were made by established clinical methods, including x-rays of hands, knees and pelvis. None had had significant amounts of gold therapy within the pre-

ceding year, except for one patient (case 8). The patients were allowed small amounts of codeine or barbiturate at nights. Routine physical treatment by massage, exercises and heat were permitted. Diet was not controlled. Body weights and blood pressure readings were recorded daily. Before treatment blood was taken for sedimentation rate and biochemical tests, and urines for endocrine assays.

Intramuscular injections of an aqueous suspension containing equal parts of crystalline testosterone and pregnenolone\* were given daily. Each patient received 200 mgm. of the mixture on the first day. Thereafter nine patients received 100 mgm. for 13 succeeding days (total dose 750 mgm. of testosterone and 750 mgm. of pregnenolone during 14 days). One patient (case 8) received 200 mgm. of the mixture daily throughout the 14 day period. Studies of the urine and blood were repeated between the tenth to fourteenth day of the treatment.

At a later date a few patients were given further injections of the same mixture or of the single components, testosterone or pregnenolone. One was also given pregnenolone orally, 150 mgm. daily during two weeks.

*Clinical results.*—The clinical findings and the results of therapy are shown in Table I. In eight of the ten patients subjective improvement was first noted between the fourth and tenth days of treatment. This was manifested by a general sense of well-being, improved appetite and diminished aching in the joints. A few days later one observed increased ranges of movement and disappearance of tenderness and puffiness about the joints. These changes were more marked in the first three cases, where the joint involvement was early and there was no periarticular fibrosis or radiological evidence of bony changes. Two patients (cases 4 and 5) had been incapacitated by large effusions into knee joints; they became able to walk painlessly although there were no demonstrable changes in the circumferences of the joints.

The last five patients (cases 6 to 10) had arthritis of more than ten years' duration and

\* From the Departments of Physical Medicine and Medicine of the Montreal General Hospital.

This work was done with the aid of Grants from Charles E. Frosst and Sons, Montreal, and the Banting Research Foundation.

\* Supplied by Charles E. Frosst and Sons, Montreal, under the name of "Bisterone". The particle size of the  $\Delta^5$ -pregnen-3( $\beta$ )-ol-20-one varied from 5  $\mu$  to 200  $\mu$ . At a later date the same firm also supplied aqueous suspensions of pure crystalline testosterone and of pregnenolone alone, and oral tablets of pregnenolone.



TABLE I.  
HISTORY AND SIGNS BEFORE TREATMENT: CLINICAL EFFECTS OF TESTOSTERONE-PREGNENOLONE INJECTIONS

Case No.	Age, sex	Total duration, years	Recent exacerbation, years	Clinical signs	Bony changes in x-rays	Subjective improvement, day	Objective improvement, day	Relapse after treatment	Remarks
1	28 M.	1	2/12	Mild: upper extrem.	None	10th	10th	2 weeks	Movements painless. Second course of combined injections effective; oral pregnenolone ineffective
2	44 F.	8	7/12	Moderate: arms, left hip.	None	4th	4th	2 weeks	Walked 7th day. Menses precipitated.
3	17 F.	2½	1/12	Mild: hands, rt. knee	None	5th	8th	4 weeks	Walked freely 12th day. Menses precipitated. Transient acne.
4	19 M.	1	4/12	Severe: effusions in knees, ankles; febrile.	None	5th	8th	6 weeks	Afebrile 8th day. Walked freely despite unchanged effusions. Second course of combined injections effective; testosterone maintained; relapsed during pregnenolone injections.
5	45 F.	10	2	Severe: fibrosis generalized, but effusion in left knee.	Present, but none in left knee.	4th	4th	2 weeks	Walked for first time in 2 years on 4th day. Walking continued during later relapse.
6	53 M.	12	3/12	Severe: generalized, fixations	Present	8th	10th	2 weeks	Mobility improved; did not walk. Later pregnenolone injections, 100 mgm. daily 6 weeks, ineffective.
7	50 F.	30	5	Severe: as case 6	Present	10th	14th	Unknown	Mobility improved; took few steps; combed hair.
8	31 F.	10	2	Severe: as case 6	Present	13th	13th	2 weeks	Double doses injected. Minimal improvement. Menses precipitated. History of remission during pregnancy.
9	54 F.	12	2	Severe: as case 6	Present	—	—	—	Ineffective.
10	83 M.	20	?	Severe: generalized; febrile.	Present	—	—	—	Rheumatoid and osteo arthritis. No improvement, though fever lower.

each showed periarticular fibrous changes and radiological evidence of joint involvement. In the three patients who felt subjectively improved there was a slight increase in mobility of the joints. Two were able to arrange their hair and walk a short distance. However, the improvement was limited. In the remaining two patients there was no change.

Gain in weight up to five pounds without oedema was frequent during treatment. In two patients fever disappeared. Pulse rates and blood pressure levels were unchanged. In the three younger women menstruation was precipitated by treatment, but thereafter the normal menstrual rhythm was resumed. One of the six women showed acne, which disappeared after stopping treatment. There were no dangerous toxic effects.

In no case were the elevated blood sedimentation rates lowered. The levels of serum electrolytes and the blood sugar time curves remained unchanged. There was always an increased excretion of 17-ketosteroids and frequently a decreased excretion of gonadotrophins. The complete biochemical and endocrinological data are presented elsewhere.<sup>3</sup>

Relapses were noted within two to six weeks after stopping treatment. Two patients (cases 1 and 4) received subsequent courses of the same mixture, and remissions were again observed. Pregnenolone orally, 150 mgm. daily for two weeks, was ineffective in case 1. Injections of pregnenolone alone, 100 mgm. daily for six weeks, in case 6 was also ineffective. Immediately after the second course of the mixture in case 4 the improvement was maintained by injections of an aqueous suspension of testosterone, 100 mgm. thrice weekly for four weeks, whereas relapse occurred soon after injections of pregnenolone alone in the same amounts were given.

#### DISCUSSION

Clinical remissions have been recently reported in the majority of 13 patients with rheumatoid arthritis treated with daily injections of pregnenolone.<sup>4</sup> It was frequently necessary to administer 200 mgm. daily for 16 to 30 days before effects were noted. In another series remissions were reported in 15 out of 30 patients after six weeks of oral treatment with pregnenolone averaging 500 mgm. daily.<sup>5</sup> Our

routine treatment with testosterone-pregnenolone injections for two weeks cannot be compared with the above schedules, but our trials with pregnenolone alone have not been promising.

From our experience with testosterone and pregnenolone together it appears that remissions can be expected only in the early cases, in which similar spontaneous remissions are frequent. The time relationship of the testosterone-pregnenolone treatment to the remissions has given us the impression that it was a contributing factor. As relapses occurred soon after stopping treatment it may be concluded that this therapy should be continued longer than was possible in the program of the present investigation.

Such effects as enhanced sense of well being, weight gain, and increased excretion of 17-ketosteroids, could be attributed to testosterone. It seems probable that testosterone was more important than pregnenolone in contributing to the clinical improvement in these patients.

#### SUMMARY

1. Four men and six women with rheumatoid arthritis were treated with intramuscular injections of aqueous suspensions of testosterone and of  $\Delta^5$ -pregnen-3( $\beta$ )-ol-20-one, 50 mgm. of each daily during two weeks.

2. Subjective improvement was noted in eight of the ten patients, but definite objective improvement was seen in five only. Improvement began on about the fifth day and was maintained for between two and six weeks after stopping treatment.

3. The five patients who showed remissions had early joint involvement with periarticular oedema or effusion in the joints. Although these signs did not entirely disappear the patients showed improved function in the joints, and were able to walk. Of the five patients with chronic manifestations three showed slight and two no improvement.

4. Pregnenolone alone in two patients by injection and in another by oral administration was ineffective in the amounts used.

5. Further trials of testosterone and pregnenolone alone or in combination are needed to establish their value in rheumatoid arthritis.

The authors wish to acknowledge the co-operation of Drs. C. W. Fullerton, E. Lozinski, J. W. McKay, E. S. Mills, A. D. Odell, J. G. Shannon and E. B. Watson.

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#### SIMPLE PROCEDURES IN INFERTILITY

H. G. Osborne, M.D.

*Calgary Associate Clinic, Calgary, Alta.*

THERE is no doubt that the incidence of infertility is considerable. Estimates vary from 10 to 20% of all married couples. If this be the case it is certainly not practical to refer all such cases to one who has been specially trained in its study. The majority of infertile couples can be investigated in the office of a general practitioner. Thus the purpose of this paper is to outline what is considered the minimum standard of procedures in the study of such a case and the logical sequence in which these procedures should be carried out.

Certain fundamentals must be kept in mind during such an investigation.

1. Most people believe that one or two office visits which may involve a pelvic examination of the wife and possibly some pills or hypodermic injections are all that is required to solve the problem. They must, then, be impressed at the outset with the fact that an infertility study involves considerably more than this and in fact requires numerous examinations, tests and office visits over a period of several months and altogether some inconvenience and expense. If a couple is not willing to go through all that such a study involves it is better not to begin it. Failure to carry out the minimum procedures results always in dissatisfaction for both doctor and patient.

2. About 30 to 40% of infertility is the responsibility of the husband. And, since frequently by one examination of his semen the husband can be ruled out as the cause, it is logical to begin any infertility study with him. This may save expensive and time-consuming investigations which might otherwise be carried out on his wife. One must always bear in mind the fact that most husbands faced with such a situation have a deep-seated fear that



they are the cause of the infertility and are often anxious to disprove it.

3. Frequently the infertility of the female is not due to one absolute cause but to a combination of factors which operate to reduce her fertility below what is normally necessary for conception to take place.

4. It is kinder not to promise too much than to raise a couple's hopes by an over-optimistic attitude. Our ignorance of many of the basic factors underlying infertility, even when we have made an accurate diagnosis, in addition to the present unsatisfactory methods of treatment should make us most guarded in our promise for results. Conversely, it is extremely unwise to state that any woman is unable to become pregnant in spite of gross pathological conditions known to exist in her pelvis.

#### OUTLINE OF OFFICE VISITS

*First visit.*—It is preferable to have both marital partners present and to spend sufficient time explaining the possible causative factors and the procedures necessary to determine them. If they understand and wish to proceed with the investigation, it is practical to order routine blood studies and have them return for physical examination.

*Second visit.*—A complete history should be taken and then the couple should have a thorough examination which, for the wife, should include a careful pelvic examination. Besides the value of such a procedure from the standpoint of general health, occasionally some condition is found in one of the partners, especially the wife, which would make pregnancy inadvisable.

*Third visit.*—If the general condition of both partners is sufficiently good, the semen appraisal of the husband may be undertaken on the third visit. Preparation for this test is as follows:

The couple is instructed to abstain from coitus for five days prior to the test, then to perform coitus interruptus at home about one hour before the specimen is required in the office. The specimen is ejaculated into a clean, dry, wide-mouthed jar with a screw top. The penis is to be milked out so that all the secretion is obtained. Condom specimens of semen are valueless for investigation and collection by this method is repugnant to some patients on religious grounds. No effort need be made to keep the specimen artificially at body tempera-

ture either on the way to the office or afterwards. If the husband brings the specimen in himself he may be informed of the appraisal results immediately.

The following figures constitute the minimum requirements for adequate male fertility:

1. Volume of semen—about  $2\frac{1}{2}$  c.c.
2. Motility—75% of the sperm should be vigorously motile at the end of two hours.
3. Count—below 60,000,000 per c.c. is considered evidence of lowered fertility.
4. Morphology—If over 20% of grossly abnormal forms are found, the specimen is considered subnormal regardless of how normal the others may be. Counting is carried out as follows: a few drops of well-mixed semen are diluted 1:20 with tap water, shaken in a white blood-counting pipette and placed on a white blood-counting chamber. The 16 squares are counted, the result multiplied by 2 and 5 zeros added to give the total count per cubic centimetre. An ordinary Gram stain is used to observe morphology.

When the examination of the semen reveals it to be substandard for fertility, the husband is referred to a urologist for treatment. In cases of aspermia the prognosis is poor, and in other deficiencies the hormones and vitamins have been relatively unsatisfactory in the treatment of the male. If the examination of the semen conforms, however, to the above standards, the husband is ruled out as a causative factor and our entire attention may be directed to the study of the wife. It is my practice to complete her investigation before any treatment is carried out.

*Fourth visit.*—Two basal metabolism tests are always done on the wife, usually in the morning of the day she is to come in for instructions as to ovulation timing. These need not be a hospital procedure but must be carried out with the strictest attention to the obtaining of basal readings. In the interpretation of the calculated figures I usually discard the first test as being in the nature of a "trial run" to familiarize the patient with the machine. My admitted purpose in doing basal metabolic rates at all is to rule out hyperthyroidism, in conjunction with clinical findings of course so that adequate thyroid may be given. In my opinion thyroid therapy is indicated in all cases of infertility where no evidence of hyperthyroidism exists and it is probably one of our greatest aids in treatment. A low thyroid rate is the most constant finding in cases of infertility and it is considered that rates in excess of minus 10 may cause serious deficiencies in the female reproductive function. When prescribed, thyroid should be given to the limit of

tolerance and maintained there usually for a number of months.

With regard to ovulation timing the patient is instructed at this visit in its purpose so that she may have sufficient incentive to pursue this somewhat annoying procedure. She is provided with a rectal thermometer and a mimeographed form bearing the following instructions:

1. Every morning before eating, drinking or smoking and while you are still in bed, shake your thermometer down to 97°—(no lower, please).
2. Using a little vaseline, insert the thermometer in the rectum and leave it there for five minutes.
3. Read the temperature and keep a record of it beside the date on a sheet of paper. Note any cold or sore throat.
4. Please take your temperature whether you are menstruating or not but mark the days when you are bleeding with an X.

The patient is told to continue her temperature readings for about eight weeks and then to bring in the record for estimation of the ovulation date. Ordinarily the temperature of a woman from the onset of a menstrual period until ovulation is 98° or below. At some point between the eleventh and sixteenth days the temperature suddenly rises to a higher level at which it continues until menstruation occurs again. Occasionally, with accurate knowledge of the time of ovulation, instructions regarding the proper time for coitus will result in conception.

*Fifth visit*—hysterosalpingography.—Before proceeding to hysterosalpingography all visible and palpable pelvic abnormalities should be corrected insofar as is possible. This applies particularly to the cervix when erosion or chronic cervicitis exists, since thick mucoid secretion may impede the passage of the sperm. Attempts at correction should also be made with regard to thickened, tender adnexæ and fixed retroversions. Until some improvement has been made in these conditions hysterosalpingography is impractical and occasionally dangerous.

So far as our investigation has gone, it is well within the scope of the general practitioner. Tubal insufflation with opaque oil under control by fluoroscopy and x-ray is, however, not always possible owing to the cost of the equipment required. A suitable machine for hysterosalpingography costs in Canada about \$300. Our group has abandoned the Rubin test as being too inconclusive in the information it provides and because it furnishes no accurate record for later comparison.

Hysterosalpingography is carried out between the second and fifth day after the cessation of the menstrual period since this is before appreciable hyperplasia has begun. Full instructions for the test are provided with each machine.

*Sixth visit*—endometrial biopsy.—Occasionally ovulation timing for one reason or another does not indicate whether the patient is ovulating. In such cases endometrial biopsy may be useful but the author does not carry it out as a routine procedure with all patients. The best time to do this test is immediately after a menstrual period has begun. This ensures that an existing pregnancy is not being interrupted. Specimens should be obtained within four hours after the onset of the period in order to be histologically perfect, as after this they undergo much degeneration. Ovulation may be assumed when the endometrium shows the secretory phase of corpus luteum stimulation but the presence of ovulation as determined by this method is of course only referable to the period concerned.

This office procedure is occasionally difficult to carry out in nulliparous women owing to the pain it may produce. No anæsthetic is used but it is wise to administer morphine—gr. 1/4—twenty minutes before the biopsy is taken. There are several types of curettes on the market made expressly for this purpose.

#### SPECIAL NOTES

1. In taking the histories of patients it is well that the partners be consulted separately so that premarital episodes may be more freely elicited. The menstrual history is important as an index of the reproductive activity of the wife. Frequency of coitus should receive special inquiry and especially its timing over the month. It is not seldom when the husband is a travelling salesman or when his occupation takes him away from home a great deal, that the act is performed only at widely scattered intervals which give small opportunity for conception. With such couples ovulation timing is of real value.

2. The rôle of the sex hormones in the treatment of infertility is as yet imperfectly understood and of all the endocrines the only one which seems to be indicated is thyroid. Occasionally, however, when endometrial biopsy indicates lack of proper endometrial develop-



ment large doses of corpus luteum hormone may be tried although this is expensive.

3. Present evidence does not indicate that the Rh factor has any bearing on infertility.

4. The retroversion of an otherwise normal mobile uterus is not regarded as a major factor in infertility. It is probably desirable to correct such retroversions with a Hodge pessary. A similar pessary is also useful in cases of acute antelexion when the cervix is well up in front.

When we have completed an infertility study in the manner outlined what have we achieved? The most important thing is that both husband and wife have had a good general examination—often their first—and that we have had an opportunity to correct abnormalities found. Secondly, we have sincerely tried to help a couple who have a genuine desire for a family and who will reward us with real gratitude for our endeavours even if these are not successful.

It is realized that this paper falls short of being satisfactory. In this respect it parallels our knowledge and competence in the field of infertility itself. If, however, with completeness and with integrity we have carried out the simple procedures mentioned above we shall have given our patients as accurate a diagnosis as it is possible to make with our present knowledge—and that, and not less, is their due.

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#### RÉSUMÉ

L'auteur trace le programme d'une routine à suivre dans les cas de stérilité. Il s'agit d'une enquête de longue haleine et le médecin doit en convaincre ses patients.

A—Il faut d'abord éliminer l'homme. B—Ne jamais promettre de résultats efficaces.

Voici la routine suggérée: 1ère visite: voir les intéressés et leur expliquer ce qu'il y a à faire. 2ème visite: histoire de cas complète des deux conjoints. 3ème visite: examen du sperme. 4ème visite: examens de laboratoire, M.B., courbe de température. 5ème visite: hystérosalpyngographie. 6ème visite: biopsie de l'endomètre. Puis selon ce qui a été trouvé le traitement est institué.

YVES PRÉVOST

The principles underlying the management of asthmatic patients have not altered in recent years, though new therapeutic agents have been introduced. A careful history designed to establish the relative importance of these allergic, infective, and psychological factors is essential. It is important to recognize that the longer the duration of the asthma the more likely it is that all factors are playing their part in maintaining the asthmatic state.—R. S. B. Pearson: *Brit. M. J.*, p. 1311, June 3, 1950.

## VAGOTOMY AND DUODENAL ULCER

(An Analysis of Fifty Cases at Westminster D.V.A. Hospital)

C. C. Ross, M.D.,\* J. H. Geddes, M.D.,†  
P. P. Hauch, M.D.‡ and N. W. Scratch, M.D.§

London, Ont.

ALL patients operated upon for duodenal ulcer since June, 1946 in Westminster D.V.A. Hospital have received at least a bilateral vagotomy. This operation has been performed on 75 patients. The variations in surgical procedures were as follows: (1) 28 patients—transthoracic or transabdominal supra-diaphragmatic vagotomy only. No other operation was combined with the vagus section; (2) 34 patients—posterior gastroenterostomy plus vagotomy; (3) 11 patients—pyloroplasty plus vagotomy; (4) 2 patients—partial gastric resection plus vagotomy.

The first 50 consecutive subjects have been carefully reviewed and assessed. We had two main objectives for such an early appraisal. First, to determine if one or all procedures have been already unsatisfactory. Secondly, if one type of operation proved satisfactory to date, would we be justified in continuing with that operation? In addition to the major objectives, the incidence of hæmorrhage, the postoperative "side effects" and gastric secretions, have been studied.

The surgical author performed all 50 operations (C.C.R.). These patients were selected by the consultant in gastroenterology (J.H.G.). The primary reason for this surgical selection is shown in Table I.

TABLE I.  
REASON FOR OPERATION

Diagnosis	No. of patients
Intractable.....	46
With hæmorrhage.....	(2)
With partial obstruction.....	(4)
Pyloric obstruction.....	4
Total.....	50

The majority were intractable duodenal ulcers. They are the ones who suffer severe and repeated

\* Director of Surgery, Westminster D.V.A. Hospital, London, Canada.

† Consultant in Gastroenterology, Westminster D.V.A. Hospital, London, Canada.

‡ Director, Department of Radiology, Westminster D.V.A. Hospital, London, Canada.

§ Research Fellow, Department of Medicine, Westminster D.V.A. Hospital, London, Canada.

long episodes of distress under rigid ulcer management. They lose months each year of gainful employment from ulcer distress other than hæmorrhage or obstruction.

Each veteran sought repeated hospitalization in this institution following service discharge, because of ulcer distress. Approximately 15% of our duodenal ulcers were referred to the surgical division. All patients accepted operation when advised, except a few who had had previous operations. There was no intentional selection on social, economic or psychological grounds. Their nationalities are predominantly Anglo-Saxon and represent a cross-section of the surrounding area. The age limits were 23 to 73 years: 82% of the group were between 30 and 60 years of age: all were male patients. The preoperative duration of symptoms ranged from 1½ to 3 years. Ten cases had symptoms for less than five years. The postoperative period has been 1 to 3 years (Table II).

TABLE II.  
POSTOPERATIVE FOLLOW-UP IN YEARS

Time (years)	Vagotomy only	Posterior gastroenter- ostomy plus vagotomy	Partial resection plus vagotomy
2½ to 3	11	6	—
2 to 2½	11	4	—
1½ to 2	2	7	—
1 to 1½	—	8	1
Total	24	25	1

The consulting gastroenterologist has seen all patients postoperatively on several occasions, at which time gastro-intestinal series were obtained. Since the Fall of 1948, each veteran has been admitted for investigation. This hospitalization was for 7 to 10 days. They were "called in" in postoperative chronological order. The junior author carried out the first of the detailed histories when the patient reported to hospital. This priority was intentional, as he was able to assure the patient that any information obtained from that interview would not be recorded in the veteran's documents.

The reasons for the investigation were first explained to the subject. He was urged to describe all his adverse postoperative symptoms, as well as the good effects. This revealed that the date of onset of symptoms, did not always arise during World Wars I and II. The symptoms were often more typical of duodenal ulcer than recorded on his service documents. The man's

appraisal of the postoperative course was usually consistent. The history-taking concluded with the following questions: "Are you pleased with your operation to date?" If so, why? If not, why? The patient's responses to the questions were used as his subjective appraisal of the operation (Table III). A few were not certain and have been listed as questionable.

TABLE III.  
SUBJECTIVE APPRAISAL

Operation	Number	Good	Poor	Uncertain
Vagotomy only	24	15	7	2
Percentage		62.5	29.1	8.3
Posterior G.E. plus vagotomy	25	22	3	0
Percentage		88	12	0
Partial resection plus vagotomy	1	1	0	0
Total operations	50	38	10	2
Total percentage		76	20	4

Barium fluoroscopic studies, spot films and four-hour x-ray films were obtained on this admission. Numerous gastric secretions were procured from each patient. We have classified each man clinically as *good*, *fair*, or *poor*, using the following criteria:

*Good*.—No gastro-intestinal symptoms; no diet restrictions; no antacids. X-ray—no ulcer crater on any occasion after the third postoperative month, satisfactory stoma. No bleeding. Weight—satisfactorily maintained. Postoperative employment—same or better than before operation with no lost time.

*Fair*.—Gastro-intestinal symptoms; slight—not typical ulcer distress. Moderate to slight side effects. Diet—only slightly restricted. Antacids—none. X-ray—no

TABLE IV.  
CLINICAL APPRAISAL

Operation	Number	Good	Fair	Poor
Vagotomy only	24	8	8	8
Percentage	33.3	33.3		33.3
Posterior G.E. plus vagotomy	25	20	2	3
Percentage		80	8	12
Partial resection plus vagotomy	1	1	—	—
Total percentage	50	58	20	22

NOTE: Total—"Satisfactory" (Good + Fair) 78%.

crater. Weight—satisfactory. Bleeding—none or minor bleeding in immediate postoperative period. Postoperative employment—same or better than preoperatively with only an occasional lost day.

*Poor*.—Any of the following: gastro-intestinal distress same as preoperatively or only improved. Severe "side effects". Diet—ulcer type. Antacids—yes. Weight—unable to maintain satisfactory weight. Hæmorrhage. Postoperative employment—not satisfactory because of symptoms.

NOTE.—We have considered the "good" and "fair" results as satisfactory.

We have preferred not to use a fourth class between poor and fair, such as "improved". The majority of the "poor" group are considerably improved. Two of these have been asymptomatic since operation, but show ulcer craters radiologically. The clinical assessment has been broken down, corresponding to the type of operation employed (Table IV).

The whole group shows satisfactory results to date in 78% of cases. Vagotomy alone yields 66.6% satisfactory results, whereas posterior gastroenterostomy plus vagotomy has been satisfactory in 88% of the cases.

Let us now analyze the failures, that is the "poor" group (Table V).

There are 8 failures amongst those having bilateral vagotomy alone. Six have had return of preoperative ulcer symptoms to some degree and 5 of these have shown a definite duodenal

TABLE V.  
ANALYSIS OF POOR RESULTS

Operation	Number	Reason for failure	Number with postoperative x-ray crater
Vagotomy only . . .	8	Ulcer distress (6) Asymptomatic but x-ray crater (2)	7
Posterior G.E. plus vagotomy . .	3	Jejunal ulcer failed to heal (2) Poorly functioning stoma with persistent duodenal crater (1)	2

ulcer crater at some time. One of the five now shows a gastric ulcer in addition to his duodenal crater.<sup>1,2</sup> The symptoms in this group returned between the first and twenty-fourth postoperative month. The remaining two failures, following vagotomy alone, have had no symptoms since operation 2 years ago. However, fluoroscopy has revealed recurrent duodenal ulcers in each. Any other method of investigation, not including repeated gastro-intestinal series, would have graded these two as "good" results.

On one of the 8 failures, a second operation was performed 2 years ago. A large vagal branch was found, resected and a posterior gastroenterostomy added. He has been asymptomatic and radiologically normal since the second operation. Thus, all failures following vagotomy alone, were due to a recurrence of duodenal ulcer, with or without symptoms.

The three failures following posterior gastroenterostomy plus vagotomy are interesting. All three had gastroenterostomies previous to vagotomy. Two had developed stomal ulcers and one had a persistent duodenal crater with a poorly functioning stoma. These were the reasons for the superimposed vagotomies.

Following vagotomy, the two jejunal ulcers perforated at the eleventh and twenty-second months respectively. The latter was fatal. Autopsy revealed that the anterior vagus had been sectioned just below a bifurcation. One branch had not been severed. The other contained a neuroma, including suture material. Below the neuroma, the nerve was continuous to the stomach. Histologically it appeared viable. In any case, the vagotomy was incomplete, but does the trunk containing the neuroma suggest regeneration of the nerve?<sup>3 to 8</sup> We have no answer.

The third failure in this group had a recurrence of epigastric distress. Fluoroscopically there has been no return of the duodenal niche, but the old, highly-placed stoma still functions poorly.

There were four patients who had gastroenterostomies previous to vagotomy. Three have just been mentioned. The fourth veteran developed a stomal ulcer following gastroenterostomy. Vagotomy was performed and his ulcer healed within four weeks. He has been symptom-free for two and one-half years. Thus vagotomy has been successful in one of three jejunal ulcers to date. Vagotomy was incomplete for certain in one of the two failures.

All failures following gastroenterostomy plus vagotomy occurred when a previous short-circuiting operation failed. *On the other hand, all the results have been satisfactory to date when vagotomy and gastroenterostomy were performed at the same time.* Ten of the 50 patients have been graded as "fair". They have some symptoms, usually "side effects", but no visible ulcer crater. Of these 10 "fair" results, 8 had only a vagotomy. Three of these eight, developed mild epigastric distress at the sixth, eighth and eighteenth months respectively. Radiologically there has been no return of an ulcer niche. However, they restrict their diet slightly. Four others experience enough diarrhoea, abdominal fullness or foul eructations to constitute some discomfort. None has ulcer distress. They have shown no ulcer craters



since operation. The remaining "fair" result following vagotomy, had an hæmatemesis at the sixth postoperative week. At this time his ulcer crater was much smaller than just before operation. Fluoroscopic healing occurred during the ensuing weeks. He has been free from both symptoms and bleeding for two years.

Two "fair" results have followed posterior gastroenterostomy plus vagotomy. The first has a moderate sensation of epigastric fullness after eating. This quickly disappears if he lies down. He loses no time from employment. The second man has a "dumping syndrome". It is not severe, but constitutes enough discomfort to rate him less than "good". Neither of them suffers ulcer distress. X-ray follow-up studies do not reveal a recurrence of duodenal ulcer.

**Mortality.**—In the total series of 75 vagotomies performed at Westminster Hospital between June, 1946 and June, 1949, there has been no operative mortality. One patient died during the twenty-second postoperative month following perforation of a stomal ulcer.

**Morbidity.**—The immediate postoperative morbidity has been slight and most patients would be able to leave hospital during the second week. A few were home on pass on the sixth day. The subsequent morbidity in terms of lost time has been low. Rough preoperative and postoperative comparisons have been attempted. We have estimated lost time for ulcer distress, be it hospitalization or days at home. We have gone back preoperatively an equal number of weeks, as his course had been followed postoperatively. Thus, if a patient were 2 years postoperative when last seen, we counted his preoperative morbidity for a two year period before operation. His immediate postoperative hospitalization was not included unless unusually long. Only 47 patients have been considered, as 3 were institutional patients for a few years before operation, and still are, for reasons other than duodenal ulcer.

On this basis, there were for the group 4,621 hospital days before, and 515 hospital days for an equal period after operation. There were 2,150 (roughly) unemployed days, not including hospitalization before, as against 119 days (roughly) after operation. Two patients used up most of the hospital days postoperatively.

**Hæmorrhage.**—The postoperative reduction in bleeding incidents has been remarkable. Pre-

vious hæmorrhages in two patients were a major factor in selecting them for operation. However, during this review, our attention was drawn to the frequent bleeding tendencies in the group. We have accepted as bleeding episodes only those occurring in hospital or immediately before hospitalization, when there was still evidence of recent hæmorrhage, or severe enough bleeding at home to require his physician's aid and bed rest. The last prerequisite was accepted, provided we had confirmation by his physician. The history or finding of occult blood in the fæces was not included.

Twenty-nine patients, representing 54% of the group had 77 proved hæmorrhages before operation. There were 29 gross hæmorrhages amongst 11 subjects. All preoperative "bleeders" suffered at least one hæmorrhage within a two-year period before operation. Since operation, only one patient has experienced bleeding, either proved or suggested by his history. This man, previously mentioned, had one bout of hæmatemesis at the sixth week. He has had none for 2 years.

**Pain.**—Most of the 50 subjects complained of epigastric pain immediately before operation. All but one obtained complete relief of this ulcer distress for at least the first month post-operatively. This one exception perforated a stomal ulcer later and autopsy revealed an incomplete vagotomy. The prompt relief of pain in our series has been no indication that the operation was successful. We believe that the postoperative four to five day gastric deflation routinely employed, accounts for pain relief when vagotomy is unsuccessful.<sup>9</sup>

**Incisional pain.**—A few patients complained of subsequent incisional pain following transthoracic vagotomy. It has been minor in all of them and occurs when pressure is applied over the incisional area.

**Pleural effusion.**—Most subjects had some degree of pleural effusion on the side of operation following the transthoracic approach. Two patients had a large enough effusion to be troublesome in the immediate postoperative period.

**Side effects.**—The significant adverse effects following vagotomy are dysphagia, diarrhœa, abdominal distension, vomiting and foul gaseous eructations. We have observed all of these "side effects" in this series. No previ-

ously unreported sequelæ of vagotomy have been observed.

**Dysphagia.**—Ten patients complained of dysphagia at some time during the first three weeks after operation. Nine of the ten had vagotomy alone. The symptom has persisted in none of them. Severe dysphagia lasted for 40 days in one man. There was no correlation with dysphagia and subsequent good clinical results.

**Diarrhœa.**—Fifteen subjects experienced varying degrees of loose, watery bowel movements during the first 3 weeks postoperatively. Seven had vagotomy alone, seven had vagotomy plus a gastroenterostomy and one had a vagotomy plus a partial gastrectomy. Diarrhœa has persisted in seven of the fifteen. It has been insignificant in four of them. They have a day or two each month with mild diarrhœa. Three patients (all with vagotomy alone), have sufficient diarrhœa to cause some distress. They lose the occasional half-day from work. None of the 15 suffering postoperative diarrhœa have experienced a return of ulcer symptoms or radiological crater to date.

A return to normal bowel function was the common finding for the whole series, despite the fact that they frequently complained of constipation before operation. The reversion to a normal diet postoperatively, was undoubtedly an important factor in relieving the constipation.

**Epigastric fullness and belching.**—Fifteen patients have had some degree of subjective epigastric distension and belching. In seven, the discomfort was very mild and only occasional. They did not volunteer the history. They did not have foul belching. Eight of the fifteen experienced foul eructations with a faecal odour. In six of these, it was mild and on occasions only. However, two of them have this undesirable "side effect" to a degree sufficient to rate their results less than good. Seven of the eight with foul eructations had vagotomy alone. Four of the eight with foul belching have had a recurrence of duodenal ulcer.

**Vomiting.**—Six patients, all following gastroenterostomy plus vagotomy, had a troublesome degree of emesis during the first two weeks. Most of these showed a temporarily mal-functioning stoma. Vomiting has persisted in none.

**Radiological studies.**—Preoperatively all patients but five had visible ulcer craters. Four of the 5 had marked pyloric obstruction. The

fifth had a visible crater on some previous occasions, but not immediately before operation. A separate report on the fluoroscopic and film studies will be made by one of us (P.P.H.).

**Gastric secretion studies.**—Numerous secretion studies were made before and after operation. These included twelve-hour overnight secretions, histamine, peptonized beef broth, test meal and insulin-induced gastric analysis. The overnight secretions were obtained by continuous suction. Three hours after a clear fluid meal, the stomach was emptied and suction commenced for twelve hours. The juices were divided into four-hourly periods. No secretions were returned to the stomach. The quantity was measured. The total and free acidity was determined by the method of Töpfer. A control group was investigated under identical circumstances (Table VI).

TABLE VI.  
AVERAGE OVERNIGHT SECRETIONS AND FREE HCL

Operation	Number	Quantity (c.c.)		Free HCl clinical units	
		Pre.	Post.	Pre.	Post
Vagotomy only..	24	815	392	31	13
Posterior G.E. and vagotomy	25	990	600	35	10
Partial resection and vagotomy	1	850	407	73	2

NOTE: Control group = 540 c.c. and 24 units HCl.

Our figures for free acidity are generally lower than many other reports.<sup>10, 11</sup> The delay until morning, before titration, probably accounts for this. However, the same circumstances hold for all of our patients, so that pre- and post-operative comparisons are reasonably reliable. The patients with duodenal ulcer showed an increased quantity and free acidity in their overnight secretions. Following operation, these factors fell to nearly normal.

The group with a gastroenterostomy plus vagotomy presented a lesser drop in "secretion" quantity and a greater fall in free acidity than did those with vagotomy only. This difference is probably due to a greater regurgitation of alkaline intestinal fluid in the gastroenterostomy group. Those with the highest preoperative secretions and those who obtained the greatest percentage reduction in total secretion and free acidity, were singled out for study. Neither of these groups has given better than the average clinical results.

The gastric secretions following histamine showed a little, but not a significant fall in post-

operative acidity. Peptonized beef broth, as well as test meal induced secretions, showed free acidity in all patients. However, post-operatively we could see no correlation with these secretions and satisfactory or poor clinical results.

Hypoglycæmic provoked gastric secretions were obtained following insulin (20 units) intravenously. The blood sugars were followed at half-hourly intervals and the gastric juices withdrawn every fifteen minutes. All patients developed blood sugars below 50 mgm. % when twenty units of insulin were given. Fifteen units frequently failed to produce satisfactory sugar levels. There has been no correlation with negative insulin tests and satisfactory clinical results.<sup>4, 12</sup> All delayed acidity responses were interpreted as positive. The delayed responses were those which showed a very late rise in acidity near the termination of the test. The rise came considerably later than the lowest blood sugar level.

TABLE VII.

Insulin secretions		Operation	Clinical results	
			(Good + fair)	Poor
Neg. test	8	Post. G.E. + vagotomy	7	1
Pos. test	13	Post. G.E. + vagotomy	12	1
Neg. test	8	Vagotomy alone	5	3*
Pos. test	12	Vagotomy alone	8	4

\*(Delayed insulin response).

NOTE: Insulin tests could not be interpreted in 9 patients.

We stress the necessity for repeated insulin tests in each subject. Several of our group have responded to hypoglycæmia in a positive manner, following a very recent negative interpretation. Table VII shows the results of insulin tests compared with the type of operation and the clinical assessment.

*Tobacco.*—All patients used tobacco preoperatively. Two were heavy pipe smokers. The others averaged about seventeen cigarettes daily. Three smoked less than ten per day. The majority had on occasions discontinued using tobacco. Four admitted that smoking aggravated their ulcer distress. Postoperatively one subject noticed distress with tobacco consumption; however, he continues to indulge as do the whole group. We have no series correlating tobacco consumption amongst those

patients who are carrying on satisfactorily on medical therapy alone.

*Alcohol.*—Prior to operation, 43 patients consumed alcohol: 41 were occasional moderate drinkers and two were chronic alcoholics. Post-operatively, three more have ceased drinking on their own initiative, as an "added protection". Prior to surgery 48% experienced epigastric distress following a few drinks of alcohol. Since operation, 18% suffered distress after an equal consumption. There was no significance in the type of alcohol and distress. Some could drink ale without distress; an equal number tolerated diluted spirits, but not ale. Several patients claim that before operation, a glass of ale (for others, some diluted spirits) would relieve their ulcer pain for a few hours.

*Appendectomy.*—Ten veterans had an appendectomy prior to vagotomy. In one, an acute suppurative appendix was removed. The remaining nine had a return of symptoms similar to those for which the appendectomy was performed. Postoperatively, one patient was informed by his private surgeon that the diagnosis of appendicitis was wrong, and that his appendix was normal. An appendectomy was performed in D.V.A. or other Military Hospitals on the remaining eight men. We have obtained the surgeons' and pathologists' post-operative diagnoses. In all cases, this diagnosis was "chronic appendicitis". The eight appendices were histologically normal. Thus 18% of the group had an appendectomy, probably for duodenal ulcer symptoms. The diagnostic error amongst ten appendectomies was 90%.

*Age.*—Exactly one-half of the patients were 45 years of age or younger on the date of operation. There has been no correlation with age, type of surgery and the clinical results to date.

*Familial tendency.*—Each subject was questioned for proved or suspected evidence of duodenal ulcer amongst other members of his family. These included his grandparents, parents, siblings and children. Forty-five patients had frequent contact with their kinfolk. Six of the forty-five have a positive history for duodenal ulcer in their immediate family. In four of the families, it is proved and in the two others, highly suggestive; e.g., "Mother had an operation for 'stomach ulcer'"; "Father died from rupture of a 'peptic ulcer'." The six patients had a total of nine family members



with peptic ulcer. Thus, 13.3% of this small group have next-of-kin with peptic ulcer. This may not be significant, since peptic ulcer is a common affliction. However, two patients suggest a familial tendency.<sup>15</sup> The father and two sons in one family; the father, son and two daughters of the other family have all proved duodenal ulcers.

*Personality.*—The patients were not interviewed by a qualified psychiatrist before or after operation. The junior author assessed their emotional qualities, as a physician would in office practice: 85% of these men appeared to be working under excess emotional tension. Most of them were hard-driving individuals. Several were foremen on "assembly-line" production. They tended to be perfectionists. They could not leave their work behind at the end of the day. During interviews they showed less spontaneous response than patients in most other outpatient departments. One man was diagnosed as a "psychopathic personality" at the time of his service discharge. We have excellent proof from other sources that his postoperative course has been much better than he admits.

#### GASTROENTEROSTOMY AND PARTIAL RESECTION FOR DUODENAL ULCER

Do failures appear during the first two or three years, when gastroenterostomy alone or partial gastric resection (without vagotomy) is employed for the control of intractable duodenal ulcer?<sup>16 to 27</sup> A great opportunity for such follow-up studies exists in veterans' hospitals. Unlike private practice, the "failure" reports back to the hospital. He is a pensioner for "duodenal ulcer" even after operation. Unfortunately, this hospital has even a smaller number of duodenal ulcers treated by gastroenterostomy or partial resection than by vagotomy. No fair conclusions can be drawn from such a small group.

During the period 1940 to 1946, 17 patients were operated upon for intractable or complicated duodenal ulcers. In 11 a partial gastrectomy was employed and in 6, a gastroenterostomy only was performed. The selection and surgical procedures were not carried out by the present personnel. However, nearly all of these veterans have been seen on occasions by the present consultant in gastroenterology (J.H.G.).

Of the 11 partial gastrectomies, 8 had intractable ulcer distress and 3 had pyloric obstruction. The resection was less than one-half and in most cases the ulcer was not resected. Within two-and-one-half years post-operatively, the results for this series were: good 1; fair 3; poor 7. The same criteria were employed to assess them, as has been in the present series. During this 2½ year period, there were proved hæmorrhages in three cases; ulcer distress in five, requiring hospitalization and ulcer diet. Five had moderate to severe "side effects", including dumping syndrome, hypoglycæmic symptoms and severe weight loss. One died on the fifth postoperative day following abdominal distension and vomiting. Six of the ten survivals are under marked dietary restrictions. One has never returned to work because of persistent ulcer-like distress and a severe dumping syndrome. Two more gave up long-held positions and accepted clerical work with less pay because of symptoms. Each of the ten surviving patients had one or more postoperative hospital admissions within 2½ years for upper gastro-intestinal complaints.

During this same period, six patients had posterior gastroenterostomies; three for intractable duodenal ulcer and three to relieve pyloric obstruction. Within two years of operation, all results were poor. Two developed proved stomal ulcers; three had a return of symptoms, including recurrence of duodenal ulcer radiologically. One died on the third postoperative day from a massive hæmatemesis.

The literature is replete with follow-up reports following the surgical management of duodenal ulcer. Too many are questionnaire reviews; too few represent a clinical follow-up of the patient. The adverse "side effects" in our gastroenterostomy plus vagotomy series, have been minimal. Following partial gastrectomy, the incidence in the small group was very significant. Crile,<sup>27, 30</sup> has observed less "side effects" following vagotomy plus pyloroplasty or gastroenterostomy, than after gastric resection alone. The incidence of jejunal ulcer, on the other hand, complicates gastroenterostomy (alone) more frequently than subtotal resection. The better "follow-ups" show marginal ulcer arising in 15 to 30% of cases, subsequent to gastroenterostomy. High subtotal resections reveal an 8 to 10% incidence of postoperative stomal ulcer.

A large number of these recurrent ulcers arise during the first two postoperative years. The highest yearly incidence of jejunal ulcers occurs during the first and second years after gastroenterostomy or subtotal resection. This early postoperative incidence of jejunal ulcer has not occurred in our small series of gastroenterostomy plus vagotomy, when performed simultaneously. Eight other patients, not included in this series, had the same operation. No marginal ulcer has arisen to date (1 year).

#### COMMENTS

An adequate evaluation of this series will not be reliable until these patients have been observed for several years. It is not our purpose to prognosticate results. However, it is our duty to veterans suffering from duodenal ulcer and coming under our care to determine if possible, whether vagotomy has been satisfactory so far. The medical management of duodenal ulcer is far from ideal. Surgical procedures after medical failures are likewise disappointing in too high a number. Surgical attacks on intractable duodenal ulcers attempt to lower the free acidity, either directly or indirectly.

A stoma can be formed to increase gastric neutralization. The antrum can be resected to eliminate a possible gastric stimulating hormone. Various amounts of the acid-pepsin secreting fundus can be resected. The greater this resection, the lesser the incidence of jejunal ulcer. However, the more extensive the resection, the higher the mortality rate becomes. Finally, resection of the vagi aims at removing the vagal gastric secretions. This abolishes the so-called psychic phase of gastric secretion.

Gastric retention following vagus resection, has been an undesirable feature. Thus gastroenterostomy has been employed by surgeons to diminish the frequency of "side effects" following vagotomy.<sup>9, 27, 29, 30</sup> Perhaps pyloroplasty will prove equally satisfactory when combined with vagotomy.<sup>27</sup> Pyloroplasty does not set the stage for jejunal ulcer if the vagotomy is unsuccessful.

In our patients, the incidence of persistent "side effects" appears to have been significantly reduced whenever a gastroenterostomy was combined with the vagotomy.<sup>28</sup> This short circuit also lowers the free gastric acidity by regurgitation of the alkaline juices. The effects of vagotomy plus gastroenterostomy

may be synergistic and it would be reasonable to expect better clinical results from the combined operation, rather than from the use of either procedure alone. No one can say as yet that a particular patient's duodenal ulcer arose from over-stimulation along the vagi. Most agree however, that acidity played a large rôle in the production of that ulcer. In our small series, the absence of postoperative bleeding has been noteworthy. It would appear that vagotomy in selected cases might be of value as a prophylactic procedure in controlling future hæmorrhages. However, more patients and a longer follow-up period would be necessary before reaching definite conclusions.

Our operative mortality has been zero to date, but we would expect some deaths in a larger series. However, we would anticipate a greater mortality rate if subtotal resections were performed routinely rather than vagotomies.

The subsequent management of the patients presents a problem. It is difficult to assess the operation *per se*, if they continue with medical management postoperatively. Therefore, after operation these men were advised to revert to a non-ulcer regimen. However, following any surgical program for duodenal ulcer, we believe that the patients should continue with at least a modified ulcer regimen. They should manage themselves as if they were in an ulcer remission. We agree with Moore,<sup>28</sup> that the operation should be considered as an added protection in the management of their disease.

#### CONCLUSIONS

1. Fifty patients have been critically reviewed after vagotomy for duodenal ulcer. The follow-up period has been 1 to 3 years.
2. Vagotomy alone has been successful in 66.6% of the cases to date.
3. Posterior gastroenterostomy combined with vagotomy has been satisfactory in 88% of the subjects to date. This included vagotomy for previously performed gastroenterostomy with complications.
4. Excluding previously complicated gastroenterostomies, the results following gastroenterostomy plus vagotomy, have been 100% satisfactory to date.
5. These short term results are better than we would expect following subtotal resection or



gastroenterostomy for the same period of time. There have been no jejunal ulcers.

6. There has been a marked drop in postoperative bleeding.

7. There has been no mortality in this series.

8. Two failures have been proved to be due to incomplete vagotomies. Some of the other poor results may also be due to this cause.

9. These veterans can be followed adequately.

10. We are justified in continuing with posterior gastroenterostomy and vagotomy.

11. The insulin test has not been helpful in prognosticating clinical results. There were no satisfactory correlations in such a small group to aid in selecting future cases.

12. We do not claim that our series of gastroenterostomy plus vagotomy will prove ultimately better than other surgical procedures for intractable duodenal ulcers.

NOTE.—This represents the opinion of the authors and it does not necessarily follow that there is agreement by other surgeons in the D.V.A., nor is it the established procedure in all D.V.A. hospitals.

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#### RÉSUMÉ

L'étude porte sur 50 patients ayant subi une vagotomie pour ulcère duodénal. La période d'observation est d'une à trois années. La vagotomie seule a donné 66.6% de résultats satisfaisants. La vagotomie accompagnée d'une gastro-entérostomie postérieure a été profitable dans 88% des cas. Ces résultats comprennent les vagotomies faites chez des patients ayant déjà eu une gastro-entérostomie antécédente non satisfaisante. Si l'on exclut ces cas la vagotomie accompagnée d'une

gastro-entérostomie postérieure a donné 100% de bons résultats. La mortalité a été nulle dans cette série. On a remarqué une baisse remarquable des hémorragies après l'opération. Les succès sont attribués à une vagotomie incomplète. Après l'opération les douleurs épigastriques disparaissent; on remarque parfois comme complications de la dysphagie (20%) de la diarrhée post-opératoire qui ne tarde pas à disparaître, de la distension stomacale (30%). L'acide chlorhydrique libre diminue dans les sécrétions gastriques. Le test à l'insuline n'a pas aidé à diagnostiquer les résultats cliniques.

Les auteurs terminent en remarquant que ce travail ne signifie pas nécessairement que la vagotomie et la gastro-entérostomie postérieure deviendront l'opération de choix pour l'ulcère duodénal mais que d'après leur expérience elles ont été les plus satisfaisantes et ont donné des résultats supérieurs à la gastrectomie sub-totale.

YVES PRÉVOST

### TRANSIENT PULMONARY MANIFESTATIONS IN RHEUMATOID ARTHRITIS

Joseph Bloom, M.D. and Jack H. Rubin, M.D.

Montreal, Que.

THE prevalence of pulmonary tuberculosis in this vicinity has possibly led to some errors in diagnosis, whereby pulmonary lesions of other causes have been overlooked. With routine chest radiography now in vogue, many hitherto unsuspected lesions have been uncovered in apparently healthy individuals. Some of these lesions may have an unusual etiology. Pulmonary reticulations simulating miliary tuberculosis and Boeck's sarcoidosis have been thus accidentally discovered in three cases of rheumatoid arthritis described by Ellman and Ball<sup>1</sup> in 1948, and in one by Leys and Swift<sup>2</sup> in 1949. They noted that a careful search of the literature did not reveal any earlier cases to date.

The purpose of this paper is to present another and perhaps a fifth case of rheumatoid arthritis in which the pulmonary lesions were quite prominent and yet intimately associated with the joint manifestations of the so-called rheumatoid state or disease.

In this case, we were able to follow the lung lesions radiologically for a period of more than one year, during which time investigations were being carried out to determine the etiology of the disease. Repeated examination by culture and concentration techniques of sputum and stomach washings failed to reveal the presence of tubercle bacilli. Of great diagnostic significance were the repeatedly negative Mantoux reactions up to dilutions of 1:10.



Our case was that of a young married female aged 26, with no known tuberculous contacts. She was somewhat undernourished but well developed. During childhood, she had pneumonia on two occasions. Her present illness began on October 25, 1948, with an acute onset of cough, expectoration and pain in her left chest, arms and legs. Examination revealed a temperature of 101° F., pulse 112; dullness and diminished breath sounds at the base of left hemithorax. An x-ray of her chest revealed some obscuring of the left base and costo-phrenic angle, suggestive of a small pleural effusion possibly associated with an underlying pneumonia (Fig. 1). She was put to bed and treated with penicillin for several days. Her temperature soon returned to normal and she improved symptomatically. One week later she was ambulatory and a repeat x-ray of her chest now surprisingly revealed a new small area of infiltration in the right upper lobe, located at the first interspace anteriorly. The pleural effusion at the left base had somewhat diminished in extent. She was again put to bed and kept under observation as a possible case of minimal pulmonary tuberculosis with a new lesion in the right upper lobe. She was x-rayed again after two weeks (Nov. 20) showing a complete disappearance of the infiltration in the right upper lobe, while the pleuritic process at the left base still persisted. A differential blood count was essentially normal and revealed no eosinophilia.

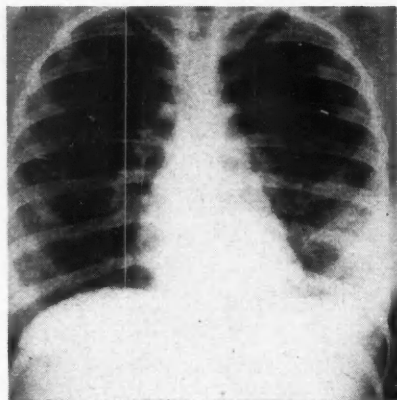


Fig. 1

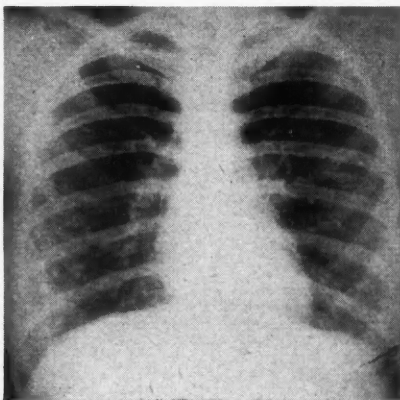


Fig. 2

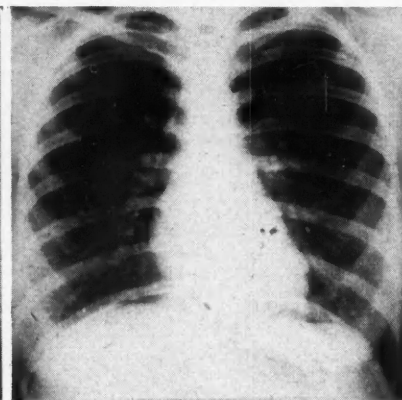


Fig. 3

She remained afebrile, asymptomatic and was questioning the necessity of her enforced bed-rest regimen. However about three months later she began to complain of pain and swelling involving the small joints of her hands, feet and left ankle. Her temperature and pulse, however, were normal, and she had gained weight. It is to be noted that she had no cough, expectoration, chest pain or other symptoms referable to her respiratory tract. X-ray of her hands revealed a moderate narrowing of the proximal interphalangeal joints associated with slight bone atrophy and soft tissue swelling pathognomonic of rheumatoid arthritis. An x-ray of her chest now revealed extensive and widespread mottling and infiltrations throughout both lung fields, somewhat resembling miliary pulmonary tuberculosis. All signs of fluid at the left base had disappeared; the left diaphragm was now normally smooth and rounded and the costo-phrenic angle was sharp and clear (Fig. 2). Culture of gastric lavage showed no growth of acid fast bacilli. Sputum inoculated on Sabouraud's medium was negative for mycotic organisms. The Mantoux reaction was negative up to 1:10 dilutions of old tuberculin. A hæmogram only revealed a rapid sedimentation rate (35 mm./1st hr.—Wintrobe-Westergren method) and there was no eosinophilia.

The swelling of her hands and feet gradually disappeared after a prolonged course of salicylate therapy and once more, she felt perfectly well. Serial x-rays at monthly intervals showed gradual disappearance of the pulmonary reticulations and on October 15, 1949, an x-ray of the chest was remarkable in that the lesions had completely disappeared and the lung fields were completely normal in appearance (Fig. 3). A year later this patient is perfectly well and leading a normal life.

#### DISCUSSION AND OPINION

It is not our intention to discuss the etiology and nature of rheumatoid disease. It will generally be accepted that like pulmonary tuberculosis it is a systemic disease with local manifestations; the former in the joints and the latter in the lungs. Moreover, the systemic nature of rheumatoid disease may be manifested, as recent studies have shown, by widespread pathological changes in various tissues and organs. The production of such multiple lesions which are mainly confined to the mesodermal system is considered to be due to a continuous antigen-antibody reaction in or on tissue cells.<sup>1</sup>

Ellman and Ball,<sup>1</sup> Hench and others,<sup>2</sup> have shown that these so-called widespread pathological changes may appear in the bones, which

exhibit atrophy, and cystic changes in the peripheral nerves leading to neuritic pains and trophic changes. They may appear in the vascular tree in the form of perivascular lymphocytic infiltrations similar to that seen in periarteritis nodosa, disseminated lupus and scleroderma—the so-called collagenous diseases; and, as our case clearly demonstrated, they may appear in the lungs, in which a reticulated or miliary-like pulmonary lesion forms an integral part of the so-called rheumatoid state.

The radiological appearance of the pulmonary lesion in the four cases of rheumatoid arthritis reported by Ellman and Ball,<sup>1</sup> and Leys and Swift<sup>2</sup> was similar to our own, presenting a widespread reticulated mottled infiltration. Both the investigations carried out, and the subsequent course of the disease, disproved the diagnosis of miliary pulmonary tuberculosis or Boeck's sarcoidosis. Two of Ellman and Ball's cases, however, died. The

pulmonary lesion found on autopsy in both cases was that of an interstitial pneumonitis with well marked fibrinoid necrosis between the lung alveoli similar to that found by Rich and Gregory<sup>4</sup> in the lungs of animals rendered anaphylactic with horse serum or egg albumen. Both cases showed no evidence of tuberculosis or sarcoidosis. The above findings therefore seem to favour anaphylaxis as the mechanism in the production of these so-called pulmonary reticulated lesions found associated with the rheumatoid state in the cases reported.

It is interesting to note in our case, that when the pleural fluid had been absorbed, the reticulated infiltrations of the lung fields appeared along with the joint manifestations of the rheumatoid state, suggesting an anaphylactic tissue reaction to an allergen (probably bacterial) which was latent when confined to the pleural spaces.

#### SUMMARY

1. A case, in which pulmonary manifestations were intimately associated with rheumatoid arthritis, has been presented.
2. The literature pertaining to this condition has been reviewed.
3. The pathological relationship of this condition to the so-called collagenous diseases has been mentioned.
4. Pulmonary manifestations in rheumatoid disease, may be due to anaphylaxis.

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#### RÉSUMÉ

Les auteurs présentent un cas de manifestations pulmonaires chez un patient atteint d'arthrite rhumatoïde. Ils font une revue de la littérature (4 cas) et donnent une histoire détaillée du leur avec présentation de clichés radiographiques. L'arthrite rhumatoïde est une maladie systémique. Il n'est donc pas surprenant de trouver des manifestations au niveau des poumons. Il est possible que ces réactions soient d'origine anaphylactique. Ces troubles pulmonaires peuvent donner le change pour la sarcoidose de Boeck ou la tuberculose.

YVES PRÉVOST

## MALIGNANT GRANULOMA OF THE NOSE

H. McCart, M.D.

Toronto, Ont.

THE first case of malignant granuloma of the nose, which ended fatally, was described by Peter McBride<sup>1</sup> in 1896, under the title of "Case of Rapid Destruction of the Nose and Face". There is no further mention of this condition until 1921, when Sir Robert Woods<sup>2</sup> published the report of two such cases under the title "Malignant Granuloma of the Nose". J. P. Stewart<sup>3</sup> collected all the cases recorded in the literature until the year 1933—ten cases in all. Hargrove<sup>4</sup> in 1946 reports another case, mentioning also a case reported by Hall.<sup>5</sup> Wegener<sup>6</sup> described three cases in detail.

Most writers describe the microscopic examination of tissue removed at different times during life as a chronic inflammatory process. There was proliferation of endothelial cells, lymphocytes and plasma cells, with the formation of granulation tissue, at first cellular, later becoming fibrous, while other areas showed necrosis.

The inflammatory condition appears to start in the subepithelial tissues, at first as a dense small round celled infiltration with engorged vessels with scattered hæmorrhages. Fibrous tissue is laid down as the disease progresses, becoming more dense in the deeper parts. The blood vessels in the early stages were proliferating; in the later stages, they showed enormous thickening of their walls and endarteritis, and in certain areas, bone was actually destroyed.

The exact pathology of this disease is most obscure. Many opinions are given as to its origin, but it appears that the disease is not a tumour, but is essentially a pyogenic one—a chronic inflammatory process. It is not one of formation, but one of destruction. O'Sullivan, who examined Sir Robert Woods<sup>2</sup> specimens, aptly describes it as a wave of granulation tissue advancing irregularly into the healthy parts, breaking down behind as it advanced in front; the granulation tissue instead of being evidence of an attempt of healing, is itself primarily the cause of the destruction.

Ewing, in reviewing sections from Geo. B. Wood's case<sup>7</sup> was of the opinion that the histological appearance most resembled syphilis, though lacking specific qualities. He ends by



saying that unless it is an entirely new disease, we are thrown back on syphilis or mycosis fungoides. Other pathologists state that the tissue from these cases resembles a typical spheroidal carcinoma; one thought it was Hodgkin's lymphadenoma.

Stewart<sup>3</sup> divides the symptoms into three stages; prodromal, active, and terminal.

1. *Prodromal*.—This period may last as long as four years. At this stage no active disease is present, though the patient may complain of a stuffy nose with watery or serosanguineous discharge. If a submucous resection is done to improve the airway, an anterior perforation of the septum usually results in healing.

2. *Active stage*.—The patient, as a rule, has definite nasal obstruction. The disease is progressive, tending to spread from the interior of the nose to the outside; ulceration of the hard palate often ensues and is accompanied by a purulent or sanguino-purulent discharge with a foul odour. The swellings are usually painless. The earliest indications of the disease are described as a brownish ulcer on the inferior turbinate or nasal septum, later on the cartilaginous part of the septum becomes perforated resulting in minor hæmorrhages. The nose becomes filled with odoriferous crusts which, on removal, reveal an ulcerating surface. Sequestra may come away and abscess formation may occur in the cheek. There is an irregular fever with moderate leucocytosis, though leucopenia may appear, as it did in one of my cases (Mrs. C.). Agranulocytosis is never present; blood cultures are negative. Hæmorrhages may be serious: both external carotid arteries had to be ligated in two of Stewart's cases.

3. *Terminal phase*.—The patient becomes exhausted because of toxic absorption. In the cases where the disease spreads to the exterior, the facial appearance becomes monstrous. The hard and soft palates may become completely destroyed, also the lateral wall of the nose. In one of my cases (Mr. B.) the anterior fossa of the skull was eroded.

The second and third stages may last twelve to eighteen months. On the whole, there is no pain, but in my two cases, excessive pain.

*Results of the disease*.—In the Edinburgh group, death ensued despite all treatment, as did the two further cases here reported. Eight of the ten Edinburgh cases died from direct effects of the disease, one from sarcoma cutis

seven months after the nasal condition had apparently been cured, and one lived four years after cure of the local condition, succumbing to miner's phthisis, but McArthur who reports the case, thought it possible that death was due to multiple sarcoma throughout the lungs. This was probably an example of anaplastic carcinoma and may explain the temporary improvement following radiation therapy. Good autopsy reports are very rare and there was no clue that this might be a generalized disease until Wegener<sup>6</sup> described in detail three cases which closely resembled ours.

*Differential diagnosis*.—The disease must be differentiated from ulceration occurring in the nose due to the following diseases: syphilis, tuberculosis, malignancy, agranulocytosis, mycosis, i.e., actinomycosis, blastomycosis and sporotrichosis, yaws, leprosy, rhinoscleroma and leishmaniasis.

*Bacteriology*.—Most cases showed streptococci, in some instances associated with staphylococci. Direct films of secretion were negative, as also were guinea pig inoculations.

*Treatment*.—In Stewart's cases antisyphilitic treatment was given in each case without benefit. It was felt that radiotherapy gave good results in early cases with skin involvement, but was not beneficial in later cases. In one case deep radiotherapy was successful. Whereas in another case radium was of help, while in another the condition was aggravated.

The total of cases so far recorded is 17, including the two reported below.

Edinburgh, 9 males, 1 female; Hargrove, 1 male; Hall, 1 female; Wegener, 1 male, 2 females; McCart, 1 male, 1 female.

Two cases occurred just under 30 years; 8 between 30 and 40 years; 1 between 40 and 50 years; 4 between 50 and 60 years; 2 between 60 and 70 years.

#### CASE 1

A.C., aged 52, female. In September, 1948, this patient began to have attacks of severe pain in the right eye and zygomatic region, extending up to the forehead and over the top of the head. She was treated for migraine. In October, 1948, she had the right antrum irrigated with no relief. In the following month a radical antrum was performed, and grossly thickened lining was found; tissue was very leathery. The report by one pathologist was chronic granulation tissue; another gave as his opinion, Boeck's sarcoid.

In December, she was referred to the Department of Neurosurgery. Previously mentioned pain more severe. On examination right upper and lower eyelids were oedematous and there was proptosis of the right eyeball and bloody, foul discharge from the right nares.

She was referred to the Department of Otolaryngology. No anosmia; high deviation of septum to right, obscuring view of right ethmoid region; small rounded mass seen in right fossa of Rosenmüller; small fistula in right canine fossa. Right antrum was reopened through



canine fossa, antrum filled with tumour of yellowish gray appearance, of rubbery consistency, with what appeared like an area of necrosis. Roof of antrum was eroded by disease and also extension into the right ethmoid.

The pathological report was, malignant granuloma. The temperature was between 99 and 101°. Chest x-ray showed small circumscribed shadow in left mid-lung field; previous chest films of November were negative.

No enlargement of cervical glands. White blood cells on admission 15,500, dropping to 8,000. Urinalysis on admission S.G. 1.019 Ac. Alb. F.T. December 26, 2 hour test 150 c.c. S.G. 1.013 Alb.-N.P.N. 38 mgm. N.P.N. rising to 190 mgm.

Following reopening of the right antrum, patient had considerable relief of pain; also less swelling of right upper and lower eyelids, but she gradually became more listless and cachectic in appearance, and died on January 13, 1949.

**Autopsy report.**—This showed malignant granuloma of the nasopharynx, spleen and lungs; ulceration of ethmoid sinuses and floor of right orbit; widespread necrotizing arteriolitis; sub-total necrosis of spleen; sub-acute glomerulonephritis; petechial haemorrhages of mucosa of stomach, duodenum, colon and rectum; ulceration of mucosa of oesophagus and small gut; bilateral pleural effusions; non-specific enlargement of the lymph nodes.

#### CASE 2

J.B., aged 52, male. In April, 1942, and again in May, 1944, the patient had nasal polypi removed which were grapelike in appearance and of pale grey colour.

Bilateral nasal obstruction, watery nasal discharge. Kahn and Wassermann reaction negative. In December, 1947, he gave a history of bilateral nasal obstruction for the past six months. Loss of weight and energy. Headache across forehead, with no relation to the time of day. Serosanguineous discharge. Admitted to hospital.

Examination showed both nostrils partly filled by firm mass with rubbery consistency, red and granular in appearance. Bled readily on section. Microscopic diagnosis, malignant granuloma.

Small shotty glands were present in both posterior triangles of neck; one removed for biopsy was reported as chronic lymphadenitis.

January 5, 1948—increasing loss of appetite and lassitude. Pain increasing across forehead, septum becoming eroded. X-ray of sinuses showed osteitis about frontal sinus. Right frontal sinus opened externally—partly filled with firm mass as seen in nose. Microscopic examination—malignant granuloma.

On January 20, left earache with spontaneous rupture of drum. He was given a course of x-ray therapy, with penicillin and streptomycin but nothing checked the course of the disease, and he died on March 16, 1948. There had been a swinging temperature of 101 to 102° since admission.

Autopsy revealed granuloma in nose, lung, spleen, hepatic veins and the kidney. Microscopic sections of the kidney showed a focal necrotizing glomerulonephritis. Granuloma were also found in the subarachnoid space, prostate, optic nerve, falx cerebri and nasal sinuses. There was complete erosion of the septum and medial walls of both antra. The mastoid air cells did not

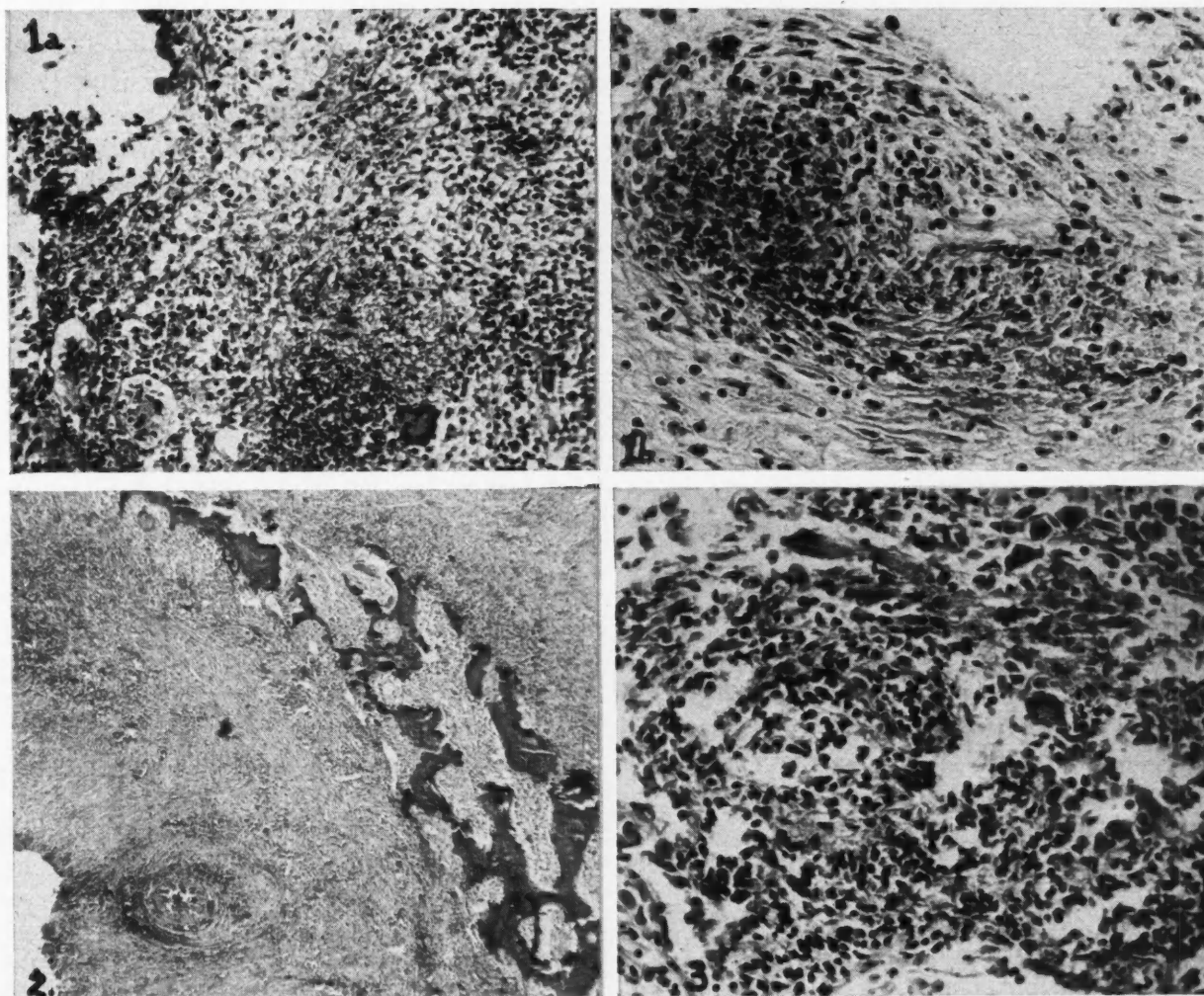


Fig. 2.—Section taken from right upper lobe of the lung (Fig. 3) at autopsy showed a process similar to Fig. 2.

reveal any particular disease though the left ear had been discharging for nearly a month.

The outstanding feature was a complete erosion of the nasal septum and medial walls of both maxillary antra by a malignant granuloma. Systemic lesions were in various organs as mentioned above.

*Microscopy.*—In one of our cases the first biopsy was taken five months before death; a lesion could be seen to begin as a focal aggregate of polymorphonuclears and eosinophiles along a tiny arteriole, often at the site of a focal necrosis of the vessel wall. When the arteriole was cut in longitudinal section it often appeared to end in a little burst of cellular exudate described by Barrie<sup>8</sup> like the puff of smoke from a cannon (Figs. 1a and 1b).

In the earliest stages these arteriolar changes were found in a background of pale pink plasma soaked connective tissue but there then appeared to be proliferation of pale plump fibroblasts, and giant cells appeared. The latter were irregular, had ill defined cell borders and often looked as if they were formed by confluence of histiocytes. The polymorph aggregates disappeared and, with the development of collagen, the lesion resembled non-specific granulation tissue, but behaved very

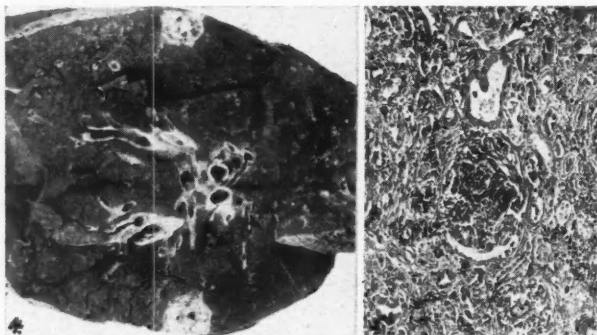


Fig. 4.—Shows subpleural nodules in the lung.

differently because it was invasive. Thus when the granulation tissue reached a medium sized arteriole it infiltrated all coats without destroying them. The later stages of this arteriole invasion could be followed in a further biopsy taken six weeks before death. In this the invaded arteries had absorbed the granulation tissue which had matured, becoming more fibrous. The result was a greatly thickened arterial wall consisting of alternate laminae of muscle and fibrous tissue. These thickened arteries may be the only clue to the nature of the lesion. In the same biopsy could be seen the characteristic invasion of bone leading to osteoclastic absorption (Fig. 2).

Ill defined areas of granulation tissue were also found in the hepatic veins, medulla and pelvis of the kidney, prostate vein and sub-arachnoid space. Cannon puff areas (Barrie) in fully developed form were found\* in the malpighian bodies of the spleen, prostate, left

optic nerve and falx cerebri. Pure focal arteriolar necrosis was found in the submucosa of the colon and in an arteriole outside a para-aortic lymph node.

The kidneys showed widespread severe focal cellular proliferations and necrosis of the glomerular tufts and capsules (Fig. 5).

#### CONCLUSION

Two more cases of malignant granuloma of the nose are added to the literature. The clinical features differ from those previously published in two important respects, in that the lesions starting in the interior of the nose did not spread to the exterior, and in both of our cases, systemic lesions were present at autopsy as well as those in the nose.

The etiology is still obscure; they do not correspond to any known infectious disease. No specific organism, fungus or virus has been shown to have relationship to the disease. As in cases previously reported, serological tests for syphilis were negative (which was true in our two cases).

Wegener (1939) whose cases so closely resemble ours, discussed the differential diagnosis fully and came to the conclusion that some unknown disease starting in the nose had produced tissue hypersensitivity and that the vascular granulomatous and renal changes were manifestations of the latter. He does not think there is any reason for trying to separate this lesion from disseminated lupus erythematosus which may show similar renal lesions, similar arteriolar necrosis, and sometimes, miliary granuloma.

Barrie<sup>8</sup> does not agree with Wegener any more than that one might suggest the bracketing together of tuberculosis and syphilis because they both show caseating granulomata as manifestations of protein hypersensitivity. He also feels that hypersensitivity vascular changes do not always occur, for they could not always have been missed in the published reports of "Malignant Granuloma of the Nose".

In our two cases, the most noteworthy histological features were the cellular granulation tissue starting in the nose, and widespread lesions in other regions of the body composed of young fibroblasts, the presence of necrosis and degeneration, with obliterating endarteritis, to which can be attributed the degeneration of the connective tissue with its accom-



panying small hæmorrhages and areas of complete necrosis.

Over a period of fifty years, 17 cases of malignant granuloma of the nose have been reported, all of which have ended fatally. Although this is a small group, it is interesting to note that 12 cases were male and 5 were female and that 8 of the 17 cases occurred between 30 and 40 years of age.

The cause of this disease is obscure. It originates in the nose with widespread lesions in other parts of the body. It would appear to present a challenge to the medical profession, especially otolaryngologists, as to its diagnosis and treatment.

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702 Medical Arts Building.

### CONGENITAL TUBERCULOSIS

H. E. Robertson, M.D., F.C.C.P.\* and  
C. F. Sullivan, B.A., M.D., F.R.C.S.(Edin.)†

London, Ont.

CONGENITAL tuberculosis is today thought to be a very rare occurrence and this is undoubtedly, in part at least, a result of the improved diagnosis and treatment of tuberculosis. The history of congenital tuberculosis dates back to 1891 when Schmorl and Birch-Hirschfeld<sup>1</sup> first demonstrated tuberculosis in the fetus. Since that time a number of cases have been reported in the literature. It is impossible to arrive at a definite conclusion as to the incidence of this condition. However, Waissman<sup>2</sup> made observations on 737 tuberculous mothers, delivered during the period 1934-1942. In the whole group of infants of these 737 mothers, 11 died from congenital tuberculosis (1.46%). He felt that the percentage would have been higher if necropsy could have been performed systematically. The majority of children from tuberculous mothers grow normally. Congenital tuberculosis develops only when tuberculous lesions are present in the placenta. This

occurrence is much more frequent, of course, in mothers with the grave forms of tuberculosis than in those with the mild forms of the disease.

The infection in cases of congenital or intra-uterine tuberculosis occurs before birth by way of the blood stream (umbilical vein), or at birth by the aspiration of tuberculous amniotic fluid or tuberculous matter present in the birth canal, or by both. Reichle and Wheelock<sup>3</sup> classify the cases into four types, (a) hepatic, (b) generalized miliary, (c) ingestion, (d) aspiration.

Infection by the blood of the umbilical vein is most common.<sup>4</sup> In some cases the site of the greatest involvement is the liver; in others the lungs. When the lesions are most prominent in the liver and in the perihepatic lymph nodes there is little doubt that the infection occurred hæmatogenously from the placenta by way of the umbilical vein.<sup>5</sup>

It is believed that when the lungs are the site of greatest involvement, that the infection must have occurred as a result of aspiration of tubercle bacilli from the infected amniotic fluid or from infected endometrium after the rupture of the membranes. Tuberculous nodules<sup>3</sup> have been found in the chorion, outside the placenta as well as elsewhere, and so tubercle bacilli may invade the liquor amnii. Several authors have demonstrated the bacilli in the liquor, and sheaves of organisms have been found pointing to a growth of the bacilli in the fluid. It is now recognized that respiratory movements occur in the fetus *in utero*. It is a familiar fact<sup>5</sup> that aspiration of amniotic fluid often occurs, as is evidenced by the frequent finding of amniotic material in the pulmonary alveoli in infants that are still-born, or that die shortly after birth. That pulmonary infection may also be derived from the maternal genital tract, after rupture of the membranes, is clear from the cases of pneumonia, caused by pyogenic bacteria, occasionally encountered in still-born infants. Thus conditions suitable for the development of the aspiration type of tuberculous infection are established. However, it does not follow that a predominantly pulmonary congenital tuberculous infection is necessarily the result of aspiration, as has been so widely assumed. In the first place, that assumption neglects the fact that bacilli can be transported from the placenta by the blood stream directly to the lungs by way of the ductus venosus,

\* Member, Medical Staff of Beck Memorial Sanatorium, London, Ontario.

† Consultant in Obstetrics and Gynæcology at the Beck Memorial Sanatorium, London, Ontario.



without passing, first, through the liver. Indeed the ductus venosus branch of the umbilical vein is considerably larger than the other branch which empties into the liver.

The diagnosis of congenital tuberculosis is very difficult and is usually made after death. There are no typical clinical signs. The x-ray is not characteristic. The spleen is usually enlarged, especially in the miliary type. The tuberculin test is usually negative, either because a specific allergy has not yet had time to develop or because a negative anergy prevails.<sup>6</sup> Baumann reports three cases of which two were caused by the aspiration of bacillary amniotic fluid and the third by the umbilical venous blood, in which the diagnosis was made by the demonstration of tubercle bacilli in the aspirated stomach contents.

#### CASE REPORT

*Mother's history.*—The mother was a 34-year old multipara, of German descent, who was admitted to the Beck Memorial Sanatorium on June 6, 1939, suffering from pulmonary tuberculosis, far advanced, active "C", bacillary. She was about six months' pregnant, the date of last menstruation being December 16, 1938. Her health had apparently been good until about October, 1938, when she developed mild respiratory symptoms which gradually became worse, with loss of weight. In May, 1939, she consulted a physician who made a diagnosis of pulmonary tuberculosis and referred her to the sanatorium. She was married in 1930; one premature still-born child 1931 and one daughter living, born 1934. Her severe bilateral pulmonary disease rendered surgical treatment inadvisable. On August 22, after a short labour, at St. Joseph's Hospital, London, Ont., she was delivered, by one of us (C.F.S.) of a living male child. She died at the sanatorium twenty days after delivery, on September 11. Permission for an autopsy was refused. The placenta, unfortunately, was not saved for pathological examination, however, the intern present at the birth stated that he felt nodulation in the placenta and cord.

*Infant's history.*—Weight at birth 4 pounds 8 ounces. The child was immediately removed from the presence of the mother and was never after in contact with her or any other person known to be tuberculous. Artificial feedings were given and a slight temporary gain in weight was noted. On the third day of life epistaxis developed and recurred at intervals. The child began to take its feedings poorly and lost weight. A chest x-ray on September 2, 1939, revealed moderately dense broncho-pneumonic disease involving all parts of both lung fields. Urinalysis was negative. Red blood cells 3,600,000. Haemoglobin 80%. White blood cells 9,800. Differential count: polymorphonuclears 81%; lymphocytes 19%. Intracutaneous tuberculin test was negative. The temperature was not elevated at any time. In spite of all therapeutic measures the child's condition became progressively worse and death occurred thirty-one days after birth, on September 22.

*Post-mortem examination.*—(Dr. F. W. Luney.) Externally the body is that of an extremely emaciated male child. Weight 3¼ lb. Length of body 18 inches. There is no subcutaneous fat, the eyes are sunken and the skin has lost its elasticity and clings to the bony points. The abdomen is distended, tense and tympanitic.

On opening the abdomen, the peritoneum is smooth and glistening and there is no increase of ascitic fluid. Heart normal. Both lungs fill the pleural cavities. The pleura is smooth and glistening with no excess of pleural

fluid. Each lung is pale pink in colour, rather large and voluminous and studded throughout with miliary, discreet, greyish-white tubercles varying in size up to 10 mm. The intervening lung parenchyma is soft and crepitant. Liver: weight 120 gm. The organ is of normal size and colour with a smooth, glistening capsule. Numerous sub-peritoneal greyish-white miliary nodules are noted throughout. On section, the nodules are found largely subperitoneally, only a few scattered nodules being recognized in the parenchyma. Spleen: weighs 60 gm., about twice normal size and adherent to the diaphragm. The organ is firm, tense and dark purple in colour with the surface studded with opaque, greyish-white nodules. On section, there is a diffuse, miliary infiltration with small, opaque, greyish-white nodules. The pancreas appears normal. Gastro-intestinal tract appears normal.

A few enlarged nodes are present in the mesentery and in the retro-peritoneal tissue along the aorta. A group of enlarged nodes also surround the hepatic ducts in the hilus of the liver. Other abdominal organs appear normal. No permission for examination of brain. Cerebro-spinal fluid, 1 c.c. cloudy. Cells: lymphocytes 80%; desquamated 15%; polymorphonuclears 5%.

*Microscopic description.*—(Positive findings only.) Spleen shows large areas of caseous tuberculosis throughout. A few more characteristic tubercles and giant cells are noted. Adrenal: one small focus of caseation is noted. Liver: large numbers of characteristic tubercles occur throughout. Giant cells are numerous and well formed. Central zone caseation is present in many areas. Attached hilar nodes show extreme widespread tuberculous caseation with obliteration of the gland parenchyma. Kidney: an occasional scattered tubercle is noted in the medullary portion of the organ. The parenchyma appears normal otherwise. Lymph node: the section shows extreme caseous tuberculosis with very little lymphoid tissue visible in the specimen. Lung: section shows marked congestion of intra-alveolar capillaries. Numerous tubercles are seen throughout the parenchyma.

*Post-mortem diagnosis.*—Widespread miliary tuberculosis of lungs, liver, spleen, kidney, adrenals and massive caseous tuberculosis of abdominal lymph nodes, terminal pulmonary congestion, marasmus.

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### THE CENTRAL MALIGNANT CHONDROMA OF BONE

John H. Fodden, M.D., Ch.B., M.R.C.S.

Pathology Institute, Halifax, N.S.

THE following case reports concern a very common type of bone tumour, the chondroma, and its malignant variant, the chondrosarcoma. The justifiable publicity of these particular cases, and their interest, depend almost entirely upon the rare selection of a central, or cancellous, position for this tumour's inception within a long bone. In one an addi-

tional noteworthy feature is the involvement of the ulna, a bone infrequently disposed to osteogenic neoplasia.

In the preparation of this brief report it was considered superfluous to consult any literature other than the exhaustive monograph of Geschickter and Copeland,<sup>1</sup> and to this authority frequent reference was made.

#### CASE 1

The patient was a young man 30 years of age, who worked as a truck driver. On discharge from the Canadian Armed Forces in 1945, he complained of some pain in the right forearm. There had been no history of trauma, and a clinical diagnosis of "strained nerve" was made. No radiographs were taken, nor was any treatment given. This symptom quickly disappeared and he

indication of this being an inflammatory lesion, and there were no enlarged subcutaneous regional lymph nodes. The patient's blood count and temperature were normal, and a chest radiograph revealed normal lung fields.

An operation for biopsy was undertaken, and during this procedure a narrow zone of tumour infiltration of the soft tissues around the bone lesion was apparent. The tough gelatinous substance of the tumour was variegated by thin strands of fibrous tissue and small irregularly-shaped pockets of connective-tissue mucoid. After a rushed histological report upon this material had confirmed the suspicion of a malignant myxochondroma, a Spence type of shoulder disarticulation quickly followed.

#### CASE 2

This patient was a man aged 48 years, a carpenter by trade. He was seen and examined by his doctor in March, 1950, to whom he complained of a "tired feeling" in his left thigh which had troubled him for about

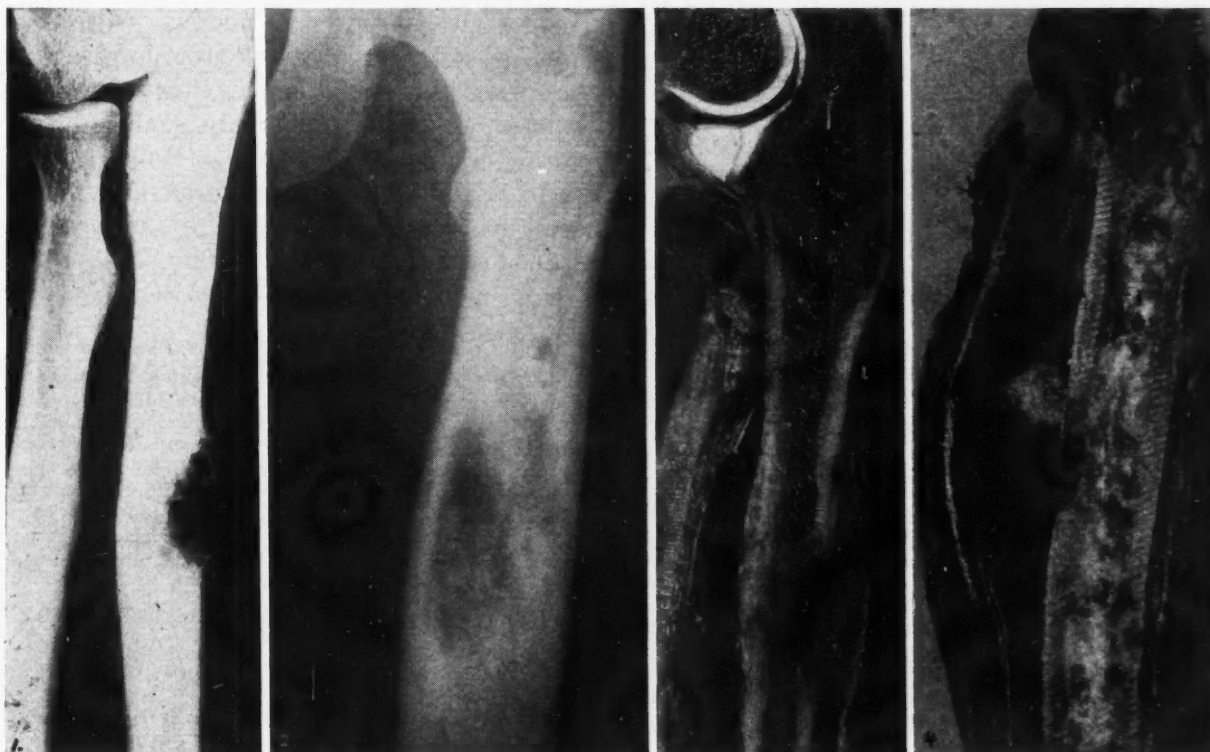


Fig. 1.—Radiographic appearance of the ulna tumour.

Fig. 2.—Radiographic appearance of the tumour of the femur.

Fig. 3.—Photograph of the segment of the forearm.

Fig. 4.—Photograph of the gross segment of the limb from Case 2.

remained free from any further pain until about one year ago when he noticed that the lifting of heavy objects would bring on an attack of pain in his right forearm. During the past three months such episodes of pain became more frequent and intense with less relation to weight carrying. He was seen and examined by his own physician and an x-ray examination of the forearm was made in Digby General Hospital.

This film reproduced in Fig. 1, showed a discrete radiolucent tumour, lobulated by fine opaque septa, occupying a cancellous position in the shaft of the ulna. It had expanded and eroded the cortex, and elicited a faint periosteal reaction. There was a noticeable lack of osteosclerosis.

He was admitted to the surgical service of Dr. N. H. Gosse, at the Halifax Victoria General Hospital in February, 1950. His physical examination on entrance revealed no deformity other than a nodular fixed mass, about one and a half inches long on the subcutaneous aspect of the midshaft region of the right ulna. There was no clinical

five months, and a weight loss of twenty-one pounds over the same period. He spoke also of a mild injury to the front of this same thigh, with attendant continued pain which had necessitated treatment by liniments, two years ago. For approximately three weeks immediately prior to this consultation he had noticed a swelling over the front of his thigh. On examination he was found to have a firm mass on the antero-lateral surface of the left femur near the junction of the upper and middle thirds.

Radiological examination of this limb revealed an elongated, radiolucent medullary tumour, extending practically to the surface of the femur anteriorly, and causing a fusiform expansion of the bony cortex over almost the entire length of the shaft (Fig. 2). Radiological examination of his chest showed his lung fields to be clear. A surgical biopsy of the tumour was done, from which material a diagnosis of chondrosarcoma was made. Disarticulation of the limb through the hip-joint followed this report.



*Pathology.*—In both cases the limbs were prepared by Dr. R. L. Saunders, for observation and description, by a frozen serial slab-section technique and Figs. 3 and 4 illustrate the selected segments. It was of interest to note that in the medulla of the femur were numerous small, irregularly-shaped "pockets" of firm cartilage, several of which were many inches distant from a larger and softer central mass, and appeared to have no direct growth connection with it. A small erosion of the cortex had occurred upon the anterior surface of the shaft, at a spot near the junction of the upper and middle thirds. Through this bony deficiency a globular cartilaginous mass, approximately 6 cm. in diameter projected beneath, and elevated, the overlying vastus muscle.

The microscopical structure of the two tumours was similar. The one from the ulna presented a complex mixture of strands of very cellular myxomatous connective tissue, islands of compact cartilage cells, some of which latter seemed to justify the title of chondroblasts, and a homogeneous basophilic matrix in which a few swollen pale cartilage cells and calcific granules were dispersed. There was no bone formation, and vascularity was poor. The femoral tumour had a much more uniform structure, approaching that of mature hyaline cartilage with the exception of greater cellularity. The cells were compacted into lobules segregated by thick septa of mature fibrous tissue. Each cell had somewhat of a stellate shape, reminiscent of the myxoma cell. Several large lobules were devoid of cells and contained a pale blue matrix only. Necrosis of tumour tissue was very evident in many sections. Vascularity was poor; calcium and bone could not be demonstrated.

#### REMARKS

The simple chondroma and the chondrosarcoma come high up in the scale of type-incidence of primary bone neoplasms. Their most frequent elective anatomical site of origin is at the ends of long bones, and it is in close association with joints like the knee, hip and shoulder that one usually thinks of these tumours. Here they probably have a periosteal, or a tendo-periosteal origin, their composition being a mixture of hyaline cartilage and cellular fibrous connective tissue; the latter, in some fraction, is of a myxomatous type. It can be believed that this cellular myxomatous tissue is the parent tissue of the whole tumour, and indeed the amount of it present in any such neoplasm commands respect in the microscopical assessment of growth potentiality or malignancy. That this myxomatous substance is a product, or a form of degeneration is best regarded as a false belief whenever osteogenic tumours are under consideration. Very frequently a light or dense admixture of spicular bone growth within the tumour is also apparent upon radiological and gross examination. It is into the soft tissues that this growth progresses, and, even in malignancy, erosion of the bone cortex with invasion of the medullary cavity comes late behind a bulky extension into the soft parts.

The central chondroma, though of somewhat similar composition, is a different clinical entity. It is most usually manifest as the central expanding tumour of the short bones of the hands and feet in young adults. A thin fragile shell of original cortex appears to form a bony capsule around the growth, but neither neoplastic bone growth nor reactive bone sclerosis have any share in its composition. The differentiation of the cells of this neoplasm would seem to stop short of this final phase, the nearest approach sometimes being patchy calcification of the tumour cartilage. Its genesis is probably from persistent myxomatous connective-tissue strands or "islands", or less probably from "nests" of formed cartilage, within the cancellous substance. In these small bones malignant change is so uncommon as to be permissibly excluded from routine clinical consideration. How very different is the incidence and behaviour of this same tumour, of like structure and probable histogenesis, when placed within the shaft of a long bone, can best be realized from the following:

"True central chondromas of the long bones are extremely rare, and it is doubtful whether such a diagnosis is justified on the basis of the roentgenogram alone. In nearly 3,000 tumours of bone there are but five well-established cases, and in these the resemblance is so close to malignancy in the roentgenogram, and the tendency for the lesion to recur and to be cured only by radical operation is so great that there is little practical harm in classing those tumours as forms of chondrosarcoma." —(Geschickter and Copeland, 1949.)

#### SUMMARY

Two cases of malignant chondroma of bone are presented. The feature of special interest in each case is the origin of the tumour from a position within the cancellous shaft of the bone.

I would like to express my indebtedness to Dr. N. H. Gosse for permission to publish Case 1, and for the use of his clinical notes and his operating-room observations; to Dr. G. R. Douglas of Aberdeen Hospital, New Glasgow, for permission to publish Case 2; and to Dr. A. E. Blackett for allowing me to include his x-ray of this case. My thanks are also due to Dr. R. L. de C. H. Saunders of the Department of Medical Museums, Dalhousie University, for his careful preparations and the photography of the gross specimens.

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There is nothing so well known as that we should not expect something for nothing—but we all do and call it Hope.—Edgar Watson Howe.



# **SOME SEROCHEMICAL DIFFERENCES BETWEEN HOMOLOGOUS SERUM HEPATITIS AND INFECTIOUS HEPATITIS**

**Paul Green, B.A., M.D.**

*Assistant Director of Laboratories,  
Deer Lodge Hospital (D.V.A.),  
Lecturer in Medicine (Manitoba),  
Department of Medicine, St. Boniface Hospital,  
Winnipeg, Man.*

**D**URING the past decade increased interest has been shown in the study of jaundice, particularly in infectious hepatitis and homologous serum hepatitis. This subject has recently been reviewed.<sup>2, 3, 10, 11, 14</sup> At the bedside there are no features that distinguish homologous serum hepatitis from infectious hepatitis, and the pathologist is unable to differentiate one from the other by examining biopsy or post-mortem material from such cases.<sup>8, 12</sup> However certain differences have been indicated.<sup>2, 3, 10, 11, 14</sup>

There is little reference in the literature to differences in laboratory tests in these two conditions. MacLagan<sup>7</sup> has noted that the thymol flocculation test is often negative in post-arsphenamine jaundice. The thymol flocculation test does not seem to be widely used and even recent reports<sup>13, 14, 16</sup> do not show the results of this test in their figures nor do they differentiate homologous serum from infectious hepatitis, rather classifying both under "viral hepatitis".

Neefe<sup>9</sup> did note a difference in the results of the thymol turbidity and the thymol flocculation test in his studies on experimentally induced hepatitis; "although the literature contains no reference to any difference between the responses to the various hepatic tests in infectious (virus IH) and homologous serum (virus SH) hepatitis, recent studies in this laboratory have suggested that the responses to the thymol and colloidal gold tests may be somewhat different in the two groups of hepatitis. In two small but closely comparable groups of patients with induced virus IH hepatitis and induced virus SH hepatitis respectively the responses to the serum colloidal gold and the thymol (turbidity and flocculation) tests were less in degree and duration in the virus SH hepatitis group than in the other group, whereas the responses to the cephalin cholesterol flocculation tests were maximal in both groups . . . whether or not this will

prove to be a frequent finding in the virus SH hepatitis remains to be determined".

This report is based on 12 cases of homologous serum hepatitis (SH) and 19 cases of infectious hepatitis (IH) encountered during the same period.

**Methods.**—The cephalin-cholesterol flocculation test (CCF) was done on fasting sera less than six hours old, and exposure of the serum to strong light was avoided. The antigen used was obtained from Difco Company. The degree of flocculation was read after 24 hours standing in the dark. In a large series of controls, we have not found positive CCF tests with these precautions.

The thymol turbidity (TT) test was done on fasting sera according to the method of MacLagan<sup>6</sup> differing only in that the pH of the buffer, as determined on the Beckman glass electrode pH meter is 7.6 instead of 7.8. Turbidity was read on a Coleman Junior spectrophotometer at 520 mμ. The instrument was calibrated from serum protein solutions of known strength as determined by means of their Kjeldahl nitrogen.

The thymol flocculation (TF) was determined by allowing the thymol turbidity test to stand for 24 hours and then reading the degree of flocculation in the same manner as for the CCF.

## **MATERIAL**

**Infectious hepatitis.**—Those patients who ran a clinical course consistent with the diagnosis infectious hepatitis, and who had no history of any type of inoculation or parenteral therapy during the preceding six months were considered to be infectious hepatitis.

**Homologous serum hepatitis.**—Those patients who ran a clinical course consistent with the diagnosis of homologous serum hepatitis and who had a history of any injections (therapeutic or prophylactic) during the preceding six months' period were considered to be cases of homologous serum hepatitis (Table I).

In Table II the results of the cases of infectious hepatitis are tabulated.

## **DISCUSSION**

In investigating the techniques used for administering drugs on the wards it was found that where aqueous solutions of penicillin were being given, it was customary to fill a syringe with several doses, and then to give the penicillin to several patients, using a different needle each time, but the same syringe full of penicillin solution.

Syringes used for the administration of morphine and other drugs were not boiled or autoclaved always, but were kept in alcohol, rinsed out with boiled water before use. Hypodermic needles were kept in alcohol, and were placed in water in a spoon, and the needle boiled over a spirit lamp. It has been re-

TABLE I.  
RESULTS OF SEROCHEMICAL TESTS

Case	Source of virus	Incubation	Days of disease	CCF	TT	TF	Serum bilirubin mgm. %
Male 31, subtotal gastrectomy	Blood trans- fusion (BT) Injections (HN)	89 days	18 days before	0	1.0	0	
			3	+++	5.5	0	18.8
			21	0	3.0	0	12.0
			28	0	3.0	0	2.3
			35	0	4.0	0	1.4
			48	0	2.0	0	1.8
Male 45, cholecystectomy	Pooled plasma (PP) HN	93 days	11	++++	4.0	0	16.0
			20	++	4.0	0	14.0
			40	0	4.0	0	2.0
			47	0	3.0	0	1.3
			62	0	4.0	0	0.77
			92	0	2.0	0	0.92
Male 26, skin graft	PP, BT, HN	72 days	7	+++	6.5	0	10.8
			15	+++	2.0	0	2.2
			25	+	4.0	0	1.3
			40	+	3.0	0	1.7
			50	0	2.0	0	
			56	+	4.0	0	1.4
Male 45, Meckel's diverticulitis	PP, HN	102 days	62	0	2.0	0	0.77
			1	++++	5.0	0	7.4
			10	++++	7.0	0	7.2
			17	++++	6.0	0	6.6
			25	+++	10.0	0	6.6
			31	+++	7.5	0	4.3
			38	+	5.0	+	2.6
			47	+	7.5	+	1.5
Male 64	BT, PP, HN	76 days	102	0	2.0	0	
			4	++++	4.0	0	8.0
			8	0	4.0	0	11.1
			50	0	4.0	0	2.6
			80	++	2.0	0	1.5
			96	++	2.0	0	
			114	+++	4.0	0	
			130	++++	6.0	0	
			145	0	2.0	+	
			156	0	3.0	0	
			270	++++	2.0	0	
			280	++++	2.5	0	1.5
Male 55, skin grafts	PP, HN	97 days	310	0	3.0	0	
			3	0	5.0	0	
			8	0	2.0	0	16.4
			15	0	2.0	0	7.6
			30	0	3.0	0	7.6
			38	0	2.0	0	5.5
			44	0	2.0	0	2.6
			75	0	2.0	0	0.76
Male 48, lobectomy, bronchogenic, carcinoma	BT, PP, HN	87 days	90	0	2.0	0	0.70
			6	+	1.0	0	12.4
			15	0	4.0	0	3.0
			37	0	4.0	0	1.5
			46	0	4.0	0	1.5
Male 68, laparotomy	HN	124 days	66				1.1
			5 mos. before	0	2.0	0	
			4	+	6.0	0	17.2
			11	+++	3.0	++	10.2
			16	+++	6.0	0	3.2
			33	+	4.0	0	2.4
Male 47, gonorrhœa	HN	63 days	96	++	1.0	+	0.5
			2	++	1.0	0	3.4
Male 76, prostatic resection benign	BT, PP, HN	124 days	7	++	1.0	0	4.2
			1	++++	6.0	0	4.4
Male 41, herniated disc	HN	110 days	Acute hepatitis—postmortem.				
			4	+	2.0	0	19.2
			11	+++	2.0	0	22.9
			24	++	5.0	0	33.6
			31	++	7.0	0	37.6
			45	+	4.0	0	14.4
			60	+++	4.5	+	6.8
Male 40, herniated disc	HN	79 days					
			28	+++	6.0	0	6.4
				+	6.0	0	4.3

TABLE II.  
INFECTIOUS HEPATITIS

Case	Days after onset of jaundice	CCF	TT	TF	Total bilirubin mgm. %
Male, age 25.....	6	++++	7.5	+++	4.6
	11	+++	6.5	++	5.0
	15	+	6.0	+++	
Female, age 46.....	7	++++	12.0	++++	14.8
	16	+++	5.0	+++	7.4
Male, age 40.....	3	++++	20.0	+++	17.0
	8	++++	16.0	++++	11.4
	17	++++	4.0	++++	
	31	++	8.0	++++	1.5
	49	++	14.0	++++	2.4
	79	++++	10.0	+++	1.6
	108	+++	8.0	++++	1.2
Male, age 47.....	2	++++	14.0	++++	14.3
	50	++++	7.5	++	1.8
	70	+	4.0	0	0.77
Male, age 32.....	9	++++	20.0	0	7.2
	16	0	10.0	++	9.0
	25	0	7.5	++++	7.8
	115	0	3.0	0	1.3
Female, age 25.....	5	++++	20.0	0	11.6
	25	0	10.0	++++	1.5
Female, age 22.....	10	++++	18.0	++++	9.2
	30	++++	8.0	++++	
	37	++++	7.5	++++	
	50	++++	5.0	++++	2.4
	80	+++	3.0	+++	1.8
	110	0	3.0	++	1.3
Male, age 25.....	3	++++	15.0	++++	16.9
	10	++++	10.0	++++	
	40	0	3.0	0	
Male, age 32.....	7	++++	15.0	0	4.0
	15	++++	20.0	0	10.1
	35	0	10.0	+	7.2
	50	0	7.5	++++	1.4
	150	0	3.0	0	1.4
Female, age 33.....	10	++++	24.0	++++	3.2
	22	++++	12.0	+++	2.6
	Chronic hepatitis developed, and two years later				
	700	++++	8.5	++++	0.92
Female, age 28.....	6	++++	7.0	++++	16.1
	15	+++	5.0	++++	
	37	0	6.0	+++	2.0
Male, age 24.....	8	++++	6.0	++++	16.0
	33	++++	3.0	++++	4.8
	64	++	4.0	+++	1.4
	92	+	2.0	++++	1.36
Female, age 18.....	20	++++	9.0	++++	4.7
	34	++++	7.0	++++	2.4
Male, age 23.....	17	++++	12.0	++++	5.0
	24	++	16.0	++	7.6
	28	++++	10.0	++++	8.4
	54	++++	10.0	++++	8.6
	94	++++	10.0	++++	8.0
Female, age 22.....	10	++++	6.0	++++	5.0
	28	+++	3.0	+++	2.0
	120	+	2.0	0	0.98
Male, age 32.....	1	++	3.0	0	3.0
	10	+++	4.0	+	7.6
Male, age 46.....	1	+++	2.5	0	6.8
	5	+	2.0	0	6.4
	16	++	20.0	++++	4.1
	30	0	2.5	0	1.1
Female, age 15.....	20	++++	12.0	++++	3.2
	30	+++	8.0	++++	1.8
	60	0	4.5	+++	1.0
Male, age 35.....	20	++++	14.0	++++	2.2
	30	+++	8.0	+++	1.1
	40	+	6.0	++	1.0



ported<sup>1, 5, 15</sup> that serum hepatitis can be transmitted by these techniques.

We were impressed by the differences shown by these two groups. The thymol flocculation test was consistently negative in the homologous serum group, whereas it was strongly positive in the main, in the infectious hepatitis group. The CCF and TT tests also tended to be less strongly positive in the homologous serum group than in the infectious hepatitis group and to return to normal more quickly. This confirms the experimental observations of Neeffe.<sup>9</sup>

These results indicate that negative CCF, TT and TF tests can be found in the presence of an acute hepatitis. They also indicate that where such tests are negative in the presence of other evidence of an acute hepatitis, the possibility of homologous serum hepatitis should be strongly considered.

From the practical clinical point of view, an important point may be drawn from these observations; when jaundice appears in a patient who has been in hospital during the preceding four months, the possibility of homologous serum hepatitis should be strongly suspected, even though the flocculation tests are negative. This may be particularly important in patients who have undergone biliary tract surgery, in whom the possibility of obstructive jaundice might be strongly suspected. Further surgery, in the presence of an acute hepatitis, might be a dangerous procedure.

#### SUMMARY

Determination of cephalin cholesterol flocculation, thymol turbidity and thymol flocculation tests has been done in a series of 12 cases of homologous serum hepatitis, and in 19 cases of infectious hepatitis.

It has been noted that these tests tend to be less strongly positive in homologous serum hepatitis than in infectious hepatitis, and to return to normal much more quickly in the homologous serum hepatitis than in infectious hepatitis.

The clinical implications of this observation are mentioned.

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### RESULTS OF THE BAND OPERATION ON THE RIGHT COLON FOR RIGHT-SIDED ABDOMINAL PAIN\*

W. A. Bigelow, M.D.

*Bigelow Clinic, Brandon, Man.*

A CERTAIN type of chronic right-sided abdominal pain has been treated for many years in this clinic by removal of bands partially obstructing the right colon. This is a report of the late results of this operation. The series of cases reported represent a group that had previously had appendectomy for right-sided abdominal pain without relief. This series is made up of 101 such cases operated upon since 1937. These operations have been performed by different members of the clinic and our earlier results were published in 1922,<sup>1</sup> in 1930,<sup>2</sup> and in 1938.<sup>3</sup>

The cases in this group were selected to include only those whose outstanding symptom was right-sided abdominal pain, unrelieved by previous appendectomy. They were all ambulatory and care was taken, by complete clinical examination, to exclude other sources of this pain.

The operation entails the complete removal of all so-called bands and membranes attached to the cæcum, ascending colon, and hepatic flexure. Section of these appears to relieve a state of partial obstruction and allows mobilization of the right colon.

Several authors, Soemmering,<sup>4</sup> Virchow,<sup>5</sup> Toldt,<sup>6</sup> Treves<sup>7</sup> and Jonnesco<sup>8</sup> have written from the standpoint of pathological anatomy of the colon and have described these abnormal developmental defects found in the attachments of the right half of the colon and terminal ileum. Riedel,<sup>9</sup> Lauenstein,<sup>10</sup> Jackson,<sup>11</sup> Lane,<sup>12</sup> and Harvey,<sup>13</sup> in the past have reported cases of "so-called appendicitis" associated with the presence of membranes of the right half of the

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colon, and that appendectomy meant a persistence of the major pain symptoms. In 1934 W. H. Bueermann<sup>14</sup> wrote fully and comprehensively on a syndrome of symptoms produced by the presence of pericolic membranes of the right colon.

#### PATHOLOGY

The cæcum in its developmental descent appears to occasionally draw membranous folds down with it. These are not adhesions. They become more dense with age. We have operated upon cases as early as five years of age. The cæcum proximal to the bands is often grossly dilated.

They vary greatly in their attachment. They generally extend from the external and lateral surfaces of the cæcum and ascending colon, outward, backward and upward, becoming attached to the parietal peritoneum. The membranes are thin, some quite vascular and easily stripped off the bowel, except along their line of insertion. From this line of insertion they have to be cut off as closely as possible.

Occasionally we find these bands consisting of folds of peritoneum which are pulled out from the posterolateral abdominal wall and extend close to, but are very rarely directly attached to, the bowel wall. The attachment of this peritoneal fold to the bowel wall is completed by a narrow film of bands of membranes extending from this fold to the colon wall; 80% of these band cases extend past the hepatic flexure for one or two inches along the transverse colon. In about 6% of the cases these membranes involve the last two or three inches of the terminal ileum.

As a result of early wound infections in this operation a bacteriological study was made and reported by the late Dr. Carter<sup>15</sup> of this Clinic, in 1917. He found in a short series of operations that cultures taken from under the bands at the time of operation gave, in a small percentage of cases, a pure culture of *B. coli*. This fact led us to adopt antiseptic surgery. After this, *B. coli* wound infections were rare.

The presence of the colon bacillus in these odd cases no doubt explains the etiology of the old time disease perityphilitis which we consider a definite entity. It is rarely diagnosed and appears to be generally listed as appendicitis.

#### SIGNS AND SYMPTOMS

These people are not acutely ill when they come to the clinic, and no doubt they are rarely seen or met with in general hospital work. They are not ill enough for hospitalization. Those who do get there as a rule enter under the diagnosis of "chronic appendiceal pain". This right-sided pain is the main symptom complained of, varying in intensity. It may be confined to a small area, generally around the cæcum, or it may extend up as far as the twelfth rib and the hepatic flexure. Generally it is absent when the patient is lying quiet. It is produced by certain positions of the body and certain movements and work, varying in intensity according to the amount of drag or pull on these bands or membranes. Riding in rough vehicles, running, jumping, jolting, long attempts at any work, reaching upwards with the right arm, even scrubbing will produce this. In farmers the complaint comes while in a wagon, tractor or while horseback riding.

Many of these people cannot lie long on their left side at night. This pain has no relation to diet or meal time, but it is aggravated by constipation, which is also a predominant symptom. A great many patients complain of the frequent formation of the right-sided phantom gas tumour, particularly while lying at night; 42% of cases show symptoms of intestinal toxæmia, and a few complain of reflex disturbances of the stomach and small intestine.

Have the patient lie straight on the left side, the right forearm over the head. Place your right hand over the area of the ascending colon and press in gradually and gently until you have overcome the resistance of the abdominal muscles. Now firmly press and drag downward and inward. You will nearly always produce the pain complained of. If this pain is not produced in this higher position, then place your hand over the cæcum and drag downward and inward in the same manner.

Evidence that these bands and membranes can produce right-sided pain was discovered accidentally thirty-five years ago. In doing appendectomies under local anæsthetic, before injecting the appendiceal mesentery, it was found that squeezing and pulling the appendix caused severe mid-abdominal and epigastric crampy pains with pallor. These were quieted with novocaine injection. After removal of the appendix, tension was put upon these bands

which had been observed and immediately the patient would shout, "that's the pain, doc". This band pain is evidently a somatic pain. The appendiceal pain in its early stages is autonomic.

#### X-RAY DIAGNOSIS

All band cases operated upon since 1915 had a complete gastro-intestinal series and barium enema. Most information was gleaned by taking the eight hour observation after barium meal. The majority of cases had over 20% residue of barium in the terminal ileum after this eight hour period.

Also, the presence of the incompetent ileo-cæcal valve was demonstrated in a large number of cases. The barium enema is only of use to one who is a very competent observer with the fluoroscope. We have found that x-ray films of a barium enema are almost useless for this diagnosis. Personally, I would stress the clinical and physical examination as most important in diagnosis after all other pathological lesions have been eliminated.

#### POINTS IN TECHNIQUE

The only satisfactory treatment for the cure of band pain is complete surgical removal, making sure that all minute bleeding points are absolutely controlled. The postoperative care is most important in order to prevent adhesions forming and localized peritonitis from arising at the site of operation. The patient is kept off the right side for two weeks. The position is changed every two hours using the left-sided position, back position or back rest, for the first week. The colon is filled daily with saline for the first ten days and the patient rolled on to the left side for a minute or two while the bowel is still distended with the solution. They are kept in bed for eighteen days. Early rising has not proved satisfactory.

It is advised that no other operative procedure be done, except appendectomy in band cases because, to our great discomfort, we had many unsuccessful results when we attempted other procedures at the same time, such as pelvic, uterine or gall bladder operation.

#### RESULTS

In this study 101 cases responded to a questionnaire. They were all patients who had sought relief for right sided pain persisting after appendectomy. Excision of bands as

described was performed; 96% reported complete relief of their pain.

Previous surveys are summarized. In 1922<sup>1</sup> response from 105 as follows:

1. *All digestive disturbances*: 74% completely relieved; 23% partially relieved; 3% no better.
2. *Abdominal pain not restricted to any part of the abdomen*: 62% completely relieved; 25% partially relieved; 13% no better.
3. *Constipation*: 68% completely relieved; 20% partially relieved; 12% no better.

In 1930,<sup>2</sup> 520 patients indicated relief in 93% of cases. In 1937,<sup>3</sup> 147 having had a previous appendectomy reported 92% relief from pain.

#### CONCLUSIONS

1. The so-called congenital bands and membranes of the cæcum and ascending colon sometimes present pathological symptoms. The main and outstanding one is right-sided abdominal pain.
2. The main symptom, pain, is usually curable by properly performed surgery, combined with adequate postoperative treatment.
3. Failure to recognize the presence of bands will explain some of the failures to cure this pain by appendectomy.
4. To get best results, no other operation should be carried out, and no exploration of the abdomen done, after the band section has been started.
5. These bands and membranes do not reform if once cleanly and properly removed; absolute hæmostasis is essential.
6. Adhesions may form, if these surgical principles are not carefully carried out.
7. A complete relief from right-sided abdominal pain diagnosed as due to bands was obtained in 96% of cases by their surgical removal.

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## BLOOD SUGAR TIME CURVES; STANDARDS OF NORMALITY\*

E. H. Bensley, M.D. and P. L. Aikman

Montreal, Que.

NORMAL values of blood sugar depend to some extent on the technique of estimation. Of the techniques available for routine clinical use, none measures glucose only; all include other reducing substances. Older methods, such as the Myers and Bailey picric acid procedure,<sup>1</sup> include considerable amounts of reducing substances other than glucose and therefore yield relatively high values. Newer methods, such as a recent Somogyi procedure,<sup>2,3</sup> yield lower values which closely approximate concentrations of glucose. Standards of normality based on experiences with older techniques cannot be applied to values obtained by newer techniques.

The Myers and Bailey picric acid technique,<sup>1</sup> with minor modifications, has been used in our laboratory for almost 30 years<sup>4,5</sup> and our standards of normality<sup>5 to 8</sup> are based on experiences with this procedure. Many of the normal values in the literature from other laboratories<sup>9</sup> are also based on work with older methods. We were therefore prompted to derive standards of normality applicable to newer techniques by comparing values obtained by our modified Myers and Bailey and one of the newer techniques; a recent Somogyi method<sup>2,3</sup> was chosen as representative of the latter group. To this end 212 blood sugar time curves were done and the amount of sugar in each blood was estimated by the two techniques.

### METHODS

1. *Administration of glucose and collection of samples of blood.*—Tests were begun in the fasting state. Fifty grams of glucose were given by mouth in the form of a chilled and palatable 20% solution flavoured with lemon juice. Samples of oxalated venous blood were collected in the fasting state and 30, 60, 120 and 150 minutes after administration of glucose. Whole blood was used in all analyses.

2. *Estimation of blood sugar by modified Myers and Bailey technique.*—Three ml. of blood were added to 12 ml. of water and the mixture was allowed to stand a few minutes to permit complete haemolysis. Approximately 0.4 gram of pure, dry, finely powdered picric acid was added. The mixture was shaken until it had a uniform yellowish brown colour and then filtered; 3 ml. of filtrate were placed in one tube; in another tube were placed 3 ml. of saturated aqueous picric acid solution contain-

ing 0.02% glucose. To each was added 1.0 ml. of 10% aqueous solution of sodium carbonate and the tubes were immersed in boiling water for 15 minutes. After cooling to room temperature, the contents of each tube were diluted with water to 10 ml. and compared in a Duboscq visual colorimeter. If the depth of colour of the unknown proved to be more than twice as great as that of the standard, the unknown was diluted to 20 ml.

The accuracy of this technique can be increased by the introduction of several modifications, such as use of a number of standards containing different amounts of glucose or a photometer permitting correction for blanks. These modifications were not used; our aim was duplication of the technique on which our standards of normality have been based.

3. *Estimation of blood sugar by Somogyi technique.*—The procedure was as described by Somogyi<sup>2,3</sup>; 2 ml. of 1:10 filtrate were used. Amounts of copper reduced were estimated by iodimetry. Potassium iodide was added after reduction of the copper-phosphate reagent. Under these conditions, Somogyi<sup>2</sup> found one ml. of 0.005 N thiosulphate to be equivalent to 0.135 mgm. of glucose. We found one ml. of 0.005 N thiosulphate to be equivalent to 0.133 mgm. of glucose in aqueous solution and 0.126 mgm. of glucose added to 1:10 blood filtrates; the latter figure was used in our calculation of values of blood sugar.

### RESULTS

Comparisons of the values obtained by the modified Myers and Bailey and the Somogyi techniques are presented in Tables I and II.

### DISCUSSION

On the basis of our experiences with the modified Myers and Bailey technique, the following standards of normality have been established.<sup>5 to 8</sup> In the fasting state the blood sugar ranges between 0.08 and 0.12%. After ingestion of glucose, the maximum hyperglycæmic response occurs at the 30 minute period and the blood sugar is then below 0.18%. At the 2 hour period, not only does the blood sugar return to its original level, but drops below it. At the 2½ hour period, the blood sugar is at the fasting level.

Tables I and II show that values of 0.08, 0.12 and 0.18% obtained by the modified Myers and Bailey technique corresponded to approximately 0.06, 0.09 and 0.13% when the Somogyi technique was used. Use of these latter values therefore provides standards of normality applicable to the Somogyi technique and other methods which also yield values closely approximating concentrations of glucose.

The data show that the higher the blood sugar, the greater was the difference between values obtained by the two methods. Estimations of glucose in aqueous solution have shown that, whereas values obtained by the Somogyi technique closely approximate calculated concentrations of glucose at all levels, the picric acid procedure used in this study yields values

\* From the Department of Metabolism and Toxicology, the Montreal General Hospital.

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TABLE I.  
COMPARISON OF MEAN VALUES OF BLOOD SUGAR OBTAINED IN 212 BLOOD SUGAR TIME CURVES BY MODIFIED MYERS  
AND BAILEY AND SOMOGYI TECHNIQUES

	Before adminstra- tion of glucose	Blood sugar (mgm. per 100 ml.)			
		Interval after administration of glucose (minutes)			
		30	60	120	150
Modified Myers and Bailey technique.....	117	176	177	129	110
Somogyi technique.....	82	129	131	95	80
Difference between values by two techniques.....	35	47	46	34	30

TABLE II.  
COMPARISON OF VALUES OF BLOOD SUGAR OBTAINED BY MODIFIED MYERS AND BAILEY AND SOMOGYI TECHNIQUES  
(Based on analyses of 1,060 samples of blood from 212 blood sugar time curves)

<i>Modified Myers and Bailey technique</i> <i>Blood sugar (mgm. per 100 ml.)</i> <i>Range</i>  <i>Mean</i>		<i>Somogyi technique</i> <i>Mean blood Sugar</i> <i>(mgm. per 100 ml.)</i>	<i>Difference between mean</i> <i>values by two techniques</i>	<i>Number of tests</i>
51 to 70	64	47	17	16
71 to 90	82	60	22	95
91 to 110	101	74	27	194
111 to 130	119	86	33	231
131 to 150	139	102	37	147
151 to 170	160	118	42	110
171 to 190	180	133	47	103
191 to 210	199	147	52	72
211 to 230	220	163	57	31
231 to 250	241	175	66	25
251 to 270	264	189	75	12
271 to 290	284	205	79	12
291 +	313	224	89	12

which are too high at levels above 0.15%. This accounts, at least in part, for the increase in differences between values by the two methods with increase in blood sugar. Further study is required to determine if this is the only factor involved. On the basis of work to date, we cannot exclude the possibility that increases of blood glucose are accompanied by increases of other substances capable of reducing picric acid.

SUMMARY

1. The amounts of sugar in 1,060 samples of blood from 212 blood sugar time curves were estimated by a modified Myers and Bailey picric acid procedure and a recent Somogyi technique.
2. From these data and standards of normality based on experiences with the picric acid procedure, we have derived standards of normality applicable to values obtained by the Somogyi technique and other methods which also yield values closely approximating concentrations of glucose.

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There is no question that the great body of unselfish men and women included in the professions of medicine and public health are vitally interested in making better health available to the people; also, that they alone are qualified to make sound plans by which to accomplish this. However, from the present chaotic status of health legislation, it is obvious that we are split into opposing groups that have not been able to agree—a situation that must remind the layman of current world politics or of Nero's fiddling in ancient Rome. This disturbing spectacle is decreasing the prestige of our professions, and, unless corrected, our lawmakers may be expected to adopt the attitude that if the leaders who have the primary responsibility for health cannot get together, they will seek leadership elsewhere.—J. S. Simmons, *The Diplomat*, **20**: 277, 1948.

## TREATMENT OF FRACTURES OF THE OS CALCIS

F. G. Day, B.Sc., M.D., F.R.F.P.S.G., M.Ch. Orth.

*Edmonton, Alta.*

OVER the past several years I have observed the main difficulties presented under various methods of treatment for this type of fracture. It has been evident that there is no general agreement on the ideal type of treatment to be adopted. In Liverpool, the results which followed the use of conservative therapy and the comparative ease with which these results were accomplished was very impressive. A detailed study of patients so treated compared with the reported results of other forms of treatment confirmed this impression. As a result of these observations it appeared that a full report of the method and end results might clarify the present concept of treatment of this injury and might perhaps, also act as a reminder that the more radical forms of treatment in surgery must produce a higher standard of results than those obtained by conservative measures before subjecting the patient to the greater risk involved in their application.

In analyzing the results of any form of treatment one must look for the cause of failure and try to decide on the probable reason for the consistently poor restoration of function which commonly follows this injury.

First on this list one would put the psychological effect in the mind of the working man when he realizes that he has a serious injury from which recovery will be slow, and which will probably leave him with some degree of permanent disability. This fear of disablement is aggravated when he realizes that he must make at least one visit to the operating theatre. Nor can the psychological effect of a long term immobilization in plaster fail to impress him with the seriousness of his case, more especially since he will have already started to think along compensation lines.

Secondly, it is evident that the patient's subsequent disability does not depend solely on the injury to the subastragaloid joint but is caused at least partly by the bruising and rupture of the peri-articular tissues and the resultant fibrosis in these structures. This suggestion is supported by a reference to the improvement in function and the relief of pain which almost invariably follows on manipulation of the foot and ankle where residual pain is present. This

procedure can do nothing more than rupture existing fibrous adhesions and would be contraindicated if the patient's pain was caused solely by arthritis of the subastragaloid joint. Again when it has been decided that the subastragaloid joint is so distorted that fusion is required, the conditions seen at operation may not tally with the diagnosis of arthritis but invariably the soft tissues round the joint are found to be thickened and fibrous.

Of third consideration, the reports on patients treated with the more radical methods in which pins are inserted to correct the salient angle, combined as a rule with compression of the os calcis body, have too often resulted in the presence of chronic osteitis of the pin tract, which is frequently the cause of long term disability. As an illustration of this point the figures reported by Janes are of particular interest. In his series of 41 patients treated by the Stadar splint, he states that there were 32 cases of chronic pin tract infection.

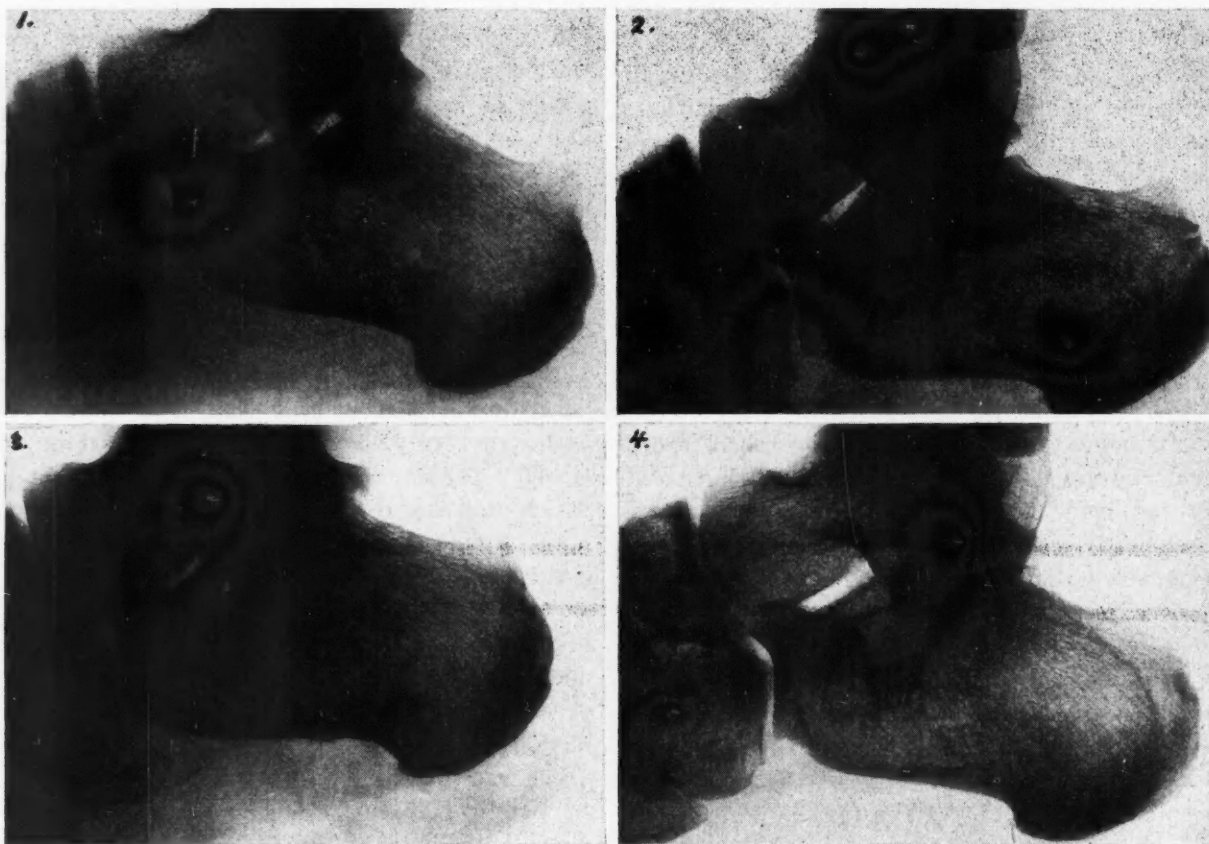
When a bone has been crushed or broken and has therefore been altered in shape and appearance, it is natural for the surgeon to set out with the idea that at all costs the original shape and structure of the injured bone must be restored. There are, however, various factors which may modify this ideal of treatment: thus, with impaction especially of cancellous bone, experience may prove that better functional results may follow if we do not interfere, *e.g.*, impacted subcapital fractures of the femoral neck and fractured vertebrae with varying degrees of compression treated as recently recommended by Nicoll. When the body of the os calcis has been severely crushed a considerable portion of the cancellous mass has been irreparably injured. If disimpaction is successful the resultant empty space in the bone becomes filled with hæmatoma which is converted into granulation tissue, callus and finally true bone, as occurs at any fracture site. This process takes time and when the distal fragment has been rotated through the approximate thirty degrees necessary to correct the salient angle, the impaction has been converted into an actual distraction of bony substances with its prolonged duration of the process of union and an end result which is, at best, mechanically unsound. Further, the os calcis is largely composed of cancellous bone with only a small encircling layer of compact bone, so that this direct weight bearing unit must look elsewhere



other than its cortex for sufficient strength to enable it to perform its intended function. The internal architecture of its trabeculae, as can be seen on a longitudinal section of the dried bone, is arranged along the lines of greatest stress in constant and regular patterns. The perfect anatomical and mechanical reduction, therefore, implies the restoration of this architectural design, and it will thus be readily appreciated that with wide destruction, full restoration is an impossibility.

From the above analysis it would appear logical that any treatment should tend to

severity, the foot is wrapped in cotton wool from the metatarso-phalangeal joints to or near the knee, followed by elastoplast strapping. The whole incident is minimized, the patient being told that he may walk on his toes as much as pain will allow, and as soon as he is able, he may commence to weight bear on his heels. On his return in one week the bandage is removed and re-applied, the patient is instructed to carry on as before and this procedure is continued, with the patient being seen at weekly intervals, until he is sufficiently well to return to work. He is encouraged to return



**Figs. 1 and 2.**—F.M. Suffered bilateral fractured os calcis on July 5, 1948. Severe enough on right side to include in this series. Following treatment as prescribed he returned to full labouring occupation on July 22, 1948. **Figs. 3 and 4.**—Same cases on April 4, 1949. Patient has continued at full strenuous labouring occupation with no pain or disability other than slight restriction of inversion movements at right sub-astragaloid joint.

minimize the psychological trauma, to avoid the use of pins and other appliances and should concentrate on the restoration of the soft tissues, as well as that of the bony anatomy.

As a result of trial and error the following method has been evolved. On admission, the patient is x-rayed and the severity of the bony destruction noted. It is generally advisable to x-ray both os calcis and the lumbar spine, since concomitant injuries in the other heel and in the spine are not uncommon. On radiological evidence of a fracture and despite its extent or

to light work as soon as he is able, and where possible a light job is arranged (Figs. 1 to 5).

Occasionally it is recognized that the bony injury is of such severity that ankylosis would appear to be inevitable, as for instance when there is wide destruction of both articular surfaces, and one would think of immobilization to aid this process. From a study of any considerable number of end results, it becomes obvious that it is impossible to give a correct forecast of the probable eventual prognosis from a study of the radiograph alone, and con-

sequently the advocates of immediate fusion of the subastragaloid joint must inevitably be depriving many patients of a useful, functioning and pain-free subastragaloid joint. Further, operation when conducted through these grossly swollen tissues is extremely difficult, and consequently we have made a practice of treating all patients with this simple method. Though none of these patients have, in fact, required operative treatment, one can always fall back on a bony fusion at a later date if it is felt that such an operation is then indicated.

Forty-two patients who had sustained this fracture and who were treated as described, were reviewed. These were all instances of comminuted fractures occurring in labourers where the radiological appearance indicated that the fracture line probably involved the

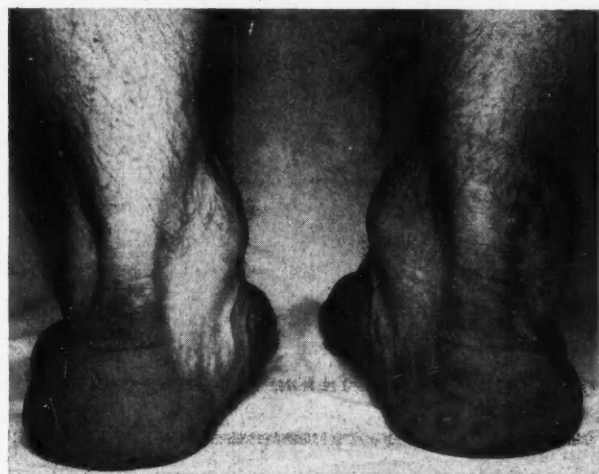


Fig. 5.—Final condition seen on April 4, 1949. Thickening and deformity is minimal.

upper as well as the lower surface of the os calcis. In none of these cases was there gross separation of the comminuted fragments—a comparatively rare type, it would appear—but moderate to severe degrees of impaction, loss of “salient” angle and disruption of the articular surfaces appeared commonly. Where gross separation did occur, the rational treatment would be an attempted reduction by closed manipulation followed by immobilization until union has developed, since we must here accept the osseous displacement as being of major concern. Among this group were four patients who had suffered fractures of each os calcis resulting in 46 fractures in 42 patients. The time between the injury and the review varied from six months to seven years with an average time of 3.2 years.

The significant features were: (1) All the patients on whom this report was made are now back at work. Of these, 33 or 78.5% returned to their previous occupation; two patients returned to light work at first but were at their original jobs two and four months later respectively; 7 patients or 17½% of those examined returned to light work and remained at it, although they were all self-supporting and were quite satisfied with their new occupation. In only one instance was the injured man receiving a monthly pension attributable to his accident. (2) The disablement period varied from two weeks to 90 weeks with an overall average of 18 weeks or approximately four and a half months.

In comparison, a review of the available literature where the various other methods advocated for treatment were used, revealed average disability periods which varied from a low of 21 weeks to a high of 55 weeks and almost invariably included some patients who were never able to resume employment. Further, operative reductions resulted in many instances of chronic osteomyelitis occasionally necessitating amputation of the extremity.

The results have been assessed, taking into account the time that they were off work and the residual disability assessed on the work they were able to do. Admittedly, this assessment is, therefore, open to criticism, since the age, the sex, the exact type of labour at which they earned their living, the type of individual and many other less obvious factors, should all be taken into account; but the criterion, as laid down above, is that which is generally used and is the only basis on which comparison may be made. Some of them still complained of slight pain on inversion and all of them present varying degrees of restriction of these movements. Clinical broadening of the os calcis is present in almost every instance with the loss of at least some proportion of the salient angle. In these series again the radiological appearance bears no relationship to the degree of disability. Indeed, in many instances it is observed that there is an actual loss in bone depth and in salient angle during the course of their treatment with no undue increase in symptoms. A further observation which supports the above conclusive figures is that many cases of fracture of the os calcis never report to a doctor, and the occasional person who is

discovered by accident when he is reporting for some other condition, had in effect, treated himself essentially as is described herein, and never complained of disabling pain referable to the injury, a point which is extremely significant. Insurance companies have actually forbidden any operative treatment in cases for which they are to assume a liability.

I can locate no other references to this exact type of treatment, or lack of treatment, in the published literature, though there is a tendency along these lines in several instances, and especially in that of the late W. J. Eastwood, whose review of 47 cases clearly indicated that "no treatment is better than any treatment", though he favoured plaster immobilization as the method of choice. We feel we have gone one step further in dispensing with the plaster altogether.

#### SUMMARY AND CONCLUSIONS

A method of treatment of fractures of the os calcis is described which requires no special apparatus, prolonged hospitalization or operative treatment. The main feature is the prevention, by early movement and weight-bearing, of the peri-articular adhesions which the author believes are a frequent cause of permanent disability. It is applicable to all os calcis fractures exclusive only of those rare types where gross separation has occurred.

The oft repeated saying that "in surgery, the simpler the method used the better are the end results", is again borne out, since, though an end result comparison shows only a slight improvement of this over other methods, the favourably comparable results are achieved in a shorter time without risk of an operation, postoperative osteitis or bone atrophy; and, most important, it tends to eliminate those adverse psychological effects initiated by a relatively long term of non-ambulatory treatment.

I wish to express my thanks to the late Professor T. P. McMurray for his constant interest and many helpful suggestions; to Mr. N. W. Roberts for the use of that portion of the total patients treated at the Royal Infirmary, Liverpool; and to the Northern Hospital, Liverpool for permission to use the cases treated in that institution.

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#### A SERIES OF THORACOPLASTIES

Elliot Harrison, M.D.\* and  
J. Carmichael Kovach, M.D.†

Vancouver, B.C.

THE American pragmatist, John Dewey, might readily delve into the knowledge we possess of the intricacies of chest surgery and there find ample illustrative material to give point to the empirical and practical methodology advocated in his philosophy.

Since a logician of such eminence advocates the purely empirical method of enquiry, there seems no reason to apologize for a paper that pretends to offer little but empirically gained information without recourse to any theoretical trappings.

This survey constitutes a report on 106 cases of thoracoplasty from the Victoria and Vancouver Units of the Division of Tuberculosis Control of B.C., Canada,‡ upon which 274 stages were performed, 56 cases being right-sided and 50 left. The operations were performed between the years 1942 to 1946 inclusive, and the survey covers the follow-up to June, 1948, that is 18 months after the last operation was performed. These cases represent those drawn from approximately 400 tuberculosis beds.

Our criteria for selection of cases preclude ages other than 18 to 45; stipulate that fibrocaseous disease should be in a stationary state; accept unilateral disease of any extent, or bilateral disease if the opposite side is apparently arrested or controlled by contralateral pneumothorax of preferably six months' duration; require a vital capacity of 1,500 c.c. except in those patients with small thoraces or in cases complicated by empyema.

Our general preoperative preparation emphasizes careful dietary treatment for two weeks in accordance with modern nutritional standards. We also have a meticulous skin preparation starting two days before operation.

For cases complicated by broncho-pleural fistula we use local anaesthesia. For all other cases gas, oxygen, and cyclopropane inhalation anaesthesia is used.

\* Chief of Surgery, Vancouver Unit, Division of Tuberculosis Control of B.C.

† Chest Surgeon, Vancouver Sanatorium and author.

‡ Under the Directorship of Dr. W. H. Hatfield.



We perform the usual radical posterior-lateral thoracoplasty injecting novocain followed by intracain into the intercostal bundle just prior to stripping the ribs. A bit of transverse process is removed but the heads of the ribs are left intact. A drain is inserted and the skin is closed with interrupted silk sutures with separate skin needles. The patient is put in an oxygen tent immediately after the operation. For the past year we have given intravenous blood in all cases postoperatively.

Twenty-five patients (23.6%) of our series had negative preoperative sputum for at least six months prior to operation. Thirty of our living thoracoplasty patients (36.1%) have essentially positive sputum since operation.

There were 16 cases with contralateral pneumothoraces. Of these, three are working full time with negative sputum, two are dead, and the other 13 are on decreased activity with positive sputum, except one who has negative sputum.

Fourteen of our cases had contralateral phrenic crushes. Of these 14 cases, two are dead, one is on full time work, one on part time work, and ten are on decreased activity.

Nine of our cases had tuberculous spread on the opposite side, of which eight are dead: 28% (three) of our cases had contralateral pneumothoraces and phrenic crushes combined, of which one died. We had one patient who developed what was considered to be atelectasis postoperatively, who died. We had three cases with a mixed tuberculous empyema. Out of these one case is on full time work with positive sputum, one is dead, and one on mid-day rest, also with positive sputum.

Eleven cases (13.7%) had persisting cavitation after the last thoracoplasty. Of these, two have negative sputum, the rest are all positive. One is working full time, while the remainder are on decreased activity.

**Conclusion.**—Based on the series reported statistical analysis of our figures suggests that mortality in the first six weeks is between 5 and 10%, and over the six and a half year period, between 18 and 26%. Approximately 50% of our cases are doing full time and 26% part time work; 36% of our series have essentially positive sputum since operation.

**Discussion.**—Since we have been doing earlier primary thoracoplasties without a long trial of more conservative therapy, our mortality rate

has improved considerably. This leads us to believe that the high rate reported in this paper is due to the acceptance of "poor risk" cases. The last 96 cases in our Division to date, have been done without a single operative mortality. We feel that this is partly accounted for by improved technique, but undoubtedly better selection of cases has been a very important factor.

All thoracoplasties were done at the Vancouver Sanatorium on the services of Dr. W. E. Harrison.

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## THE GENERAL PRACTITIONER AND HIS NEIGHBOURHOOD HOSPITAL

W. V. Johnston, B.A., M.D.

Lucknow, Ont.

[The general practitioner is faced with a struggle, not only to maintain his status, but to improve it. The situation has developed gradually, though with increasing momentum, in recent years. It calls for corresponding deliberation.

At the very root of the matter lies the necessity for men to examine their work, that is, to examine themselves. If the general practitioner is to have the responsibilities in hospital work for which he asks, he must be able to shoulder them.

These are generalities. Organized action calls for details; and these, like the cells of tissues, must be fitted together in their proper pattern.—EDITOR.]

**T**HIRTY years ago health services largely revolved around individual doctors and a few hospitals. The remarkable progress of medical science since then has been accompanied by the building of these services more and more around institutions, hospitals, and groups of workers. This development is giving every member of the medical team a potentially more important rôle. Especially is this true of the general practitioner, who has been provided

with many more weapons for his fight against disease and injury. But to use these properly every doctor who aspires to provide modern medical service must have the use of a hospital. A doctor cannot adequately practise medicine today without hospital facilities and the opportunity for professional association with his confrères in those hospitals. Every doctor, as he enters private practice, should have some status on the staff of his neighbourhood hospital. It may at first be only a courtesy standing on the first rung of a ladder of merit to be climbed as his learning and experience increase; but he should have at least that status. It is simply not good enough that a qualified physician should have the use only of second and third rate facilities of nursing homes and private hospitals. It is not good enough for the patients or for the profession generally.

These are some of the convictions of members of the Section of General Practice of the Canadian Medical Association, as expressed at the annual meeting at Halifax in June this year. These doctors from Newfoundland to British Columbia showed much concern over the status of many men in a considerable proportion of large city hospitals. In at least three of our four Ontario cities with teaching centres many family physicians have too limited hospital connection and association for the good of their professional efficiency. These men complained that a limitation of their use of hospital facilities in all parts of the country was making it increasingly difficult for them to treat their patients competently.

The growth of specialization has altered the part played by the general practitioners in the larger cities, in a manner that does not apply to doctors in smaller communities. In some cases it has resulted in working conditions that restrict the privileges of all members of their group because of the shortcomings of a few. I submit that most of these men, in and near the larger centres, are perfectly able and competent and are doing excellent work. Our general health progress attests to this. If general practice is to continue to be a worthy and indispensable activity in the medical field, it must attract some of our ablest young men. It will not do this if those engaged in it feel they are subject to unfair limitations or if their relations with the workers in other fields are not on a mutually respectful co-operative basis.

General practitioners see our governments spending millions of dollars on hospital construction and the provision of more and better facilities in those hospitals for the care of the sick. They see hundreds of thousands of dollars being spent annually by citizens and the state for the education and training of doctors to work in these buildings and employ these aids. They see many of these hospitals using certification as the most convenient, and, sometimes as almost the sole, yardstick of eligibility to their staff appointments. They have no objection whatever to specialists using the hospitals. It is their right. But surely it is also the right of the family physicians. They do not ask it by reason of special privilege. If it is not their right, then their education has been misdirected and they all should have been specialists.

The able doctor thinks first of the welfare of his patient. How can he treat, in a modern manner, those with such ailments as congestive heart failure, diabetes or coronary infarction without the freest use of hospital facilities, and without being able to check and re-check his diagnosis and treatment with consultants? Dr. E. P. Joslin states that the treatment of diabetes from the cradle to the grave is the duty of the general practitioner, and that in his own interest the diabetic should keep his own physician. Dr. C. C. Burlingame, Associate in Psychiatry at Columbia University, states that preventive psychiatry must be done largely by the family physician. We submit that it is most difficult to be proficient in these or any field of medicine without hospital connections.

Opinions vary as to the procedures in the various medical fields that properly may be considered skills of general practice. No definition of general practice is applicable to all its practitioners in all places at all times. Many general practitioners do considerable general surgery. As some justification for limiting the use of hospitals to selected doctors in many fields we believe that undue emphasis has been placed on errors of commission in one field, that of surgery, and not enough consideration given to what doctors will learn when allowed to treat and follow their patients in hospitals. Surgery has many units of service often uniquely complete in themselves, and so it has been subject to easier appraisal. Controls of all medical activities in hospitals are certainly necessary. A



doctor should be permitted to do work within his capabilities as judged by his fellows. The Section of General Practice is not asking for any relaxation of controls but rather for a greater participation in administering them. This will ensure greater supervision of their members having regard to their training, experience and general competence.

Emphasis on hospital and specialist services is wholly commendable; but the lack of comparable emphasis on general practice in city hospitals is restricting the range and depressing the quality of the work done in that field. Moreover, denial of representation on hospital staffs to groups of doctors will have a very disturbing long range effect. It limits seriously the ability of those doctors to determine their own professional future. Legislate so that general practice will flourish, or else it will become effaced.

We are not alone in feeling this discrimination keenly. In the *World Medical Association Bulletin* of January, 1950 a special committee on postgraduate medical education reported of the general practitioner:

"... that lip service is paid to him as the backbone of medicine, and it is true that he should be. There is danger, however, that he may be relegated to the position of one who sorts out patients for reference to a particular specialist.

"Far too few hospitals provide for integration of general practitioners with the staff of the hospital or with its work. The staffs of hospitals are organized to provide departments for the individual specialists who devote themselves in their teaching to the training of residents and assistant residents—more specialists—and who provide little of importance for the advancement of the general practitioner. The tendency should be rather to provide beds for utilization by general practitioners in the care of their patients. A division of general practice should be included in the staff of the hospital. Membership of general practitioners on various special committees of the staff would logically ensue."

The report goes on to urge that all national medical associations give these questions consideration and take appropriate action.

*Medicine in the Changing Order*, a publication of the New York Academy of Medicine, has this to say of postgraduate training of family physicians:

"Nothing would aid more in making general practice adequate for great numbers of people than procedures by which these practitioners could keep in touch with advancing science. The most immediate way to accomplish this is through association with good hospitals. In cities, a considerable percentage of doctors lack the necessary association with the hospitals which are available."

The slowness of the medical profession in this country in meeting some of its responsi-

bilities to society in the economic and social field may be due partly to incomplete co-operation between all its groups. Doctors who are to lead must be more than technically competent professional men. They must have insight into the social and economic problems of medical services. In this respect family physicians are making a contribution that is unmatched; but one that will continue only if they are permitted to share fully in all the latest medical advances.

The Section of General Practice wishes to examine this situation fairly and without prejudice. It is very important that doctors discuss such matters as these with the same honesty, humility and resolute regard for the facts that they show in their scientific work. Hospitals do not exist for doctors, nurses or any lay group. They are there for the use of sick people. The welfare of the patient is paramount. A hospital's objective has been said to be fourfold: care of the sick, research, teaching, and the furthering of community welfare. The governing body, the trustees, are legally and morally responsible for every act within their hospital. Their duties include, especially, setting of policy, providing equipment and facilities, assuring adequate and accurate records, careful selection of staff and personnel, and maintenance of proper professional standards.

There must be control of the medical work in a hospital. The proper place for such control is locally by its medical staff. To make sure that all doctors are represented on hospital staffs and share in its privileges and responsibilities may not be easy. Many practical problems always lie between the shaping of any general plan and its implementation. In a plan for integrating the family physician into the work of hospitals the American Academy of General Practice has established the following four principles, and we feel that these might well guide us in Canada.

1. The general practitioner should be in a position to work on the staff of all general hospitals, and an evaluation of his clinical abilities should be based upon the quality of his individual training, skill, judgment and results.

2. The activities of the general practitioner should be in keeping with his training and experience, and he should be expected to participate in any clinical service for which he can qualify.

3. The general practitioner, because of his education, training and experience is ideally suited to conduct outpatient clinics in which diagnoses are made and patients referred, if necessary, to the appropriate clinical services.



4. On the in-patient service he should be integrated into the various specialty services and subject to their jurisdiction.

Hospital plans for organizing general practice departments embodying these basic principles have been approved by Dr. McEachern, Association Director of the American College of Surgeons. In these plans, which aim at engaging the family doctor in hospital work in a manner satisfactory to all, there is no service of general practice as such. All patients are admitted to the present existing services and family physicians are attached to those services. The focal point is the credentials committee which determines the basic privileges of the various physicians.

General practitioners have now organized at the Dominion level. With remarkable unanimity they insist on placing primary emphasis on education and measures for the improvement of their services. They believe that some such plan of staff organization of the large city general hospitals, as outlined above, is fundamental to the continued well-being of the general practice of medicine in this country. They are well aware that privileges always carry with them responsibilities. They know that in granting rights to any group of doctors the individuals of that group must assume greater responsibility for the quality of their services.

It is the sincere wish of the general practitioner of today to find the happiest solution to the problem of obtaining fair working conditions in his neighbourhood hospital. As he tries to improve his services he needs help to determine his course of action and to enable him to carry it out.

### L'OMNIPRATICIEN ET SON HOPITAL DE VOISINAGE\*

W. V. Johnston, B.A., M.D.

Lucknow, Ont.

*[L'omnipraticien doit lutter non seulement pour maintenir son statut mais aussi pour l'améliorer. C'est là un état de choses qui s'est intensifié peu à peu au cours des dernières années. Il y a là matière à mûre réflexion.]*

*Il importe avant tout aux hommes de faire un examen approfondi de leur œuvre, c'est-à-dire d'eux-mêmes. L'omnipraticien doit être en mesure d'assumer les responsabilités qu'il réclame dans sa participation au travail d'équipe d'hôpital.*

*Voilà des généralités. Toute action concertée est faite de détails; comme les cellules des tissus, ceux-ci doivent*

*s'imbriquer les uns dans les autres pour former un même tout homogène.—LA REDACTION.]*

CONTRAIREMENT à ce qui se passait il y a plus d'un quart de siècle, alors que les services de santé étaient assurés pour une large part par quelques rares hôpitaux et certains médecins particuliers, la médecine moderne tend de plus en plus à grouper ses activités autour d'institutions, d'hôpitaux et d'équipes médicales. Il revient ainsi un rôle d'une importance sans cesse grandissante à chacun des membres de ces équipes, et notamment au praticien dont l'arsenal médical s'enrichit de jour en jour d'armes nouvelles. Pour en faire un bon usage et suivre les données scientifiques les plus récentes cependant, il est essentiel qu'on lui donne accès aux différents services de l'hôpital ainsi que l'occasion de prendre contact avec son personnel médical. Tout médecin, dès ses débuts en pratique privée, devrait acquérir un statut quelconque parmi le personnel de l'hôpital de son voisinage ou de sa région; c'est un droit qui lui revient d'emblée, un geste de courtoisie toujours apprécié dans les modestes débuts. Un médecin dûment qualifié ne saurait se contenter des services de deuxième et de troisième ordre que fournissent les maisons de santé et les hôpitaux privés. Les malades n'y trouvent guère leur profit, la profession médicale non plus.

A l'assemblée annuelle de la Canadian Medical Association tenue à Halifax en juin dernier, on a souligné cet état de choses et déploré que l'efficacité professionnelle de trop de médecins, à travers tout le pays, se trouve de plus en plus diminuée du fait qu'on ne leur facilite guère l'accès aux services hospitaliers.

C'est dans les grandes villes notamment que les omnipraticiens se voient submergés sous la marée montante des spécialistes. Et cependant je suis certain que pour la plupart ils font montre de compétence et de savoir et qu'ils accomplissent un excellent travail, ainsi qu'en fait foi l'amélioration de notre état de santé à tous les âges de la vie. La pratique générale de la médecine, pour se perpétuer, doit continuer d'attirer nos meilleurs étudiants, et à cette fin il importe qu'on ne leur donne pas d'exemples de restrictions injustes ni de manque de collaboration.

Que l'on dépense des millions pour construire, aménager des hôpitaux et y former des médecins, que l'on considère le certificat de spécialisation comme à peu près l'unique raison de

\* Traduction par Dr G. A. Seguin, Montreal.

faire partie d'un personnel médical, les praticiens ne nient pas ce privilège aux spécialistes, c'est leur droit de se servir des hôpitaux. Mais c'est sûrement aussi le droit des médecins de famille, sinon ils eussent mieux fait de se faire tous spécialistes.

Comment le praticien peut-il, sans l'aide de l'hôpital, diagnostiquer et traiter certaines affections de la manière la plus moderne? Le diabète, l'hygiène mentale, entre autres, devraient relever pour une très large part du médecin de famille.

Il n'y a aucun doute que l'on doive se prémunir contre certaines fautes chirurgicales et fausses manœuvres opératoires et exercer un certain contrôle sur la sélection des chirurgiens, mais rien ne devrait empêcher les praticiens de s'adonner à la chirurgie dans la mesure où ils en ont été jugés capables par leurs pairs. D'ailleurs, la chirurgie les intéresserait peut-être beaucoup moins s'ils avaient librement accès aux services de médecine dans les grands centres hospitaliers. Agir autrement serait diminuer sérieusement le prestige du médecin et décourager pour l'avenir ceux qui voudraient s'engager dans ce champ cependant fructueux et certainement indispensables de la profession médecine.

"L'omnipraticien est le pivot de la médecine, mais il est à craindre qu'il ne devienne relégué au seul rôle de fournisseur pour les spécialistes." Telle est l'opinion exprimée dans le *World Medical Association Bulletin* de janvier 1950, et l'on y ajoute: "Le personnel médical des hôpitaux compte très peu de praticiens, il est fait surtout de spécialistes qui accaparent tous les services pour eux-mêmes ou leurs élèves. On devrait au contraire instituer un service de médecine générale et y pourvoir des lits pour l'usage des praticiens, qui par le fait même deviendraient membres des différents comités du personnel médical."

En devisant de moyens de rendre plus attrayante la pratique de la médecine générale à plus de candidats, le plus efficace et le plus immédiat serait sans doute de multiplier et faciliter davantage les contacts des praticiens avec les bons hôpitaux, assurant ainsi leur avancement de pair avec les progrès de la science. C'est seulement à cette condition qu'ils parviendront à être plus que de simples professionnels et techniciens compétents. Coopérant plus étroitement avec tous leurs autres confrères, ils seront des chefs de file, capables d'assumer certaines de leurs responsabilités dans le domaine économique et social.

Ces considérations sont émises sans préjudice ni impartialité. Les médecins se doivent d'apporter à l'étude de ces questions l'honnêteté,

l'humilité et la droiture qui caractérisent leur travail scientifique. C'est le bien-être du malade qui vient avant tout. C'est pour lui que les hôpitaux ont été créés, et non pour les médecins, garde-malades ni aucune autre coterie. Le soin des malades, la recherche, l'enseignement et l'avancement du bien-être public, voilà le quadruple objectif de l'hôpital; outre leurs autres devoirs, voilà la fin essentielle que se doivent d'atteindre les gouverneurs et bureaux d'administration.

Il n'est pas facile d'intégrer tous les médecins sur le personnel médical des hôpitaux, là même où s'exerce le contrôle du travail qui s'y fait et où se partagent les privilèges ainsi que les responsabilités. A cet effet cependant, l'American Academy of General Practice a posé quatre principes généraux dont l'application est facilement réalisable ici au Canada.

1. En déterminant ses aptitudes de clinicien d'après son entraînement individuel, son art, son jugement et ses résultats, il devrait y avoir place pour l'omnipraticien sur le personnel médical de tous les hôpitaux généraux.

2. S'il est jugé apte à faire partie de n'importe quel service clinique, son travail sera mesuré en rapport avec son entraînement et son expérience.

3. Pour cette même raison, le praticien est très bien qualifié pour servir dans les dispensaires, pour diagnostiquer et diriger ensuite les malades dans leurs services respectifs.

4. Dans les services intérieurs, son intégration se fera dans les diverses spécialités après qu'on se sera assuré de sa compétence.

Dans les plans déjà approuvés par l'American College of Surgeons et qui comportent ces principes fondamentaux, il n'est pas question de service de médecine générale proprement dit. Le praticien est simplement attaché aux services déjà existants. Il appartiendra avant tout à un comité de sélection d'accorder à chaque médecin la place et les privilèges qui lui reviennent.

Les omnipraticiens se sont maintenant organisés sur le plan national. Unanimes qu'ils sont à chercher à améliorer leur standard scientifique, ils croient pouvoir atteindre cet objectif en organisant ainsi le personnel médical des grands hôpitaux généraux urbains. S'ils revendiquent en groupe de tels droits, ils sont également prêts à assumer toutes les responsabilités qui en découlent.

En cherchant à servir avec avantage dans son hôpital de voisinage sans plus de discrimination, l'omnipraticien sent le besoin qu'on l'aide à lui tracer sa conduite et à mener son œuvre à bonne fin.



## CASE REPORTS

TORSION OF THE HYDATID OF  
MORGAGNI

M. H. Schultz, M.D. and H. L. Chapman, M.D.

Port Arthur, Ont.

Torsion of the hydatid of Morgagni has been reported 26 times up to and including the cases reported in 1948 by Reis and DeCosta.<sup>1</sup> Because of the small number of cases in the literature, the following additional case is considered of interest.

Miss E.B., age 18, was first seen at her home on October 25, 1949. She was complaining of severe pain in the right lower abdomen. She had been well until 1 p.m., October 24, when she noticed a feeling of discomfort in her lower abdomen. This had increased slightly during the afternoon, but at intervals, the discomfort was scarcely noticed. Her appetite was not affected, and she had no nausea or vomiting. At bed-time, she applied a hot water bottle to her lower abdomen, with some relief. At 2 a.m., October 25, she was awakened by a severe pain in the right lower quadrant of her abdomen. The severity increased, and on sitting up, she became dizzy and was forced to lie down again. When she was first examined at 3.30 a.m., she appeared pale and shocked.

Functional inquiry was essentially negative. Her menstruation had been regular since commencing at 14, and she had had no dysmenorrhœa. Her last normal menstrual period prior to her illness was October 1, 1949. Physical examination showed a temperature of 97.8° F., pulse 82, blood pressure 110/70. Her abdomen was soft, with some hyperæsthesia over the right lower quadrant and splinting of the rectus on deep pressure in the right lower quadrant. White blood count was 10,400. She was admitted to hospital. On pelvic examination she was found to be tender in the region of the right ovary. This could not be defined exactly because of the tenderness and no examination was done under anaesthesia.

In view of the findings, a tentative diagnosis was made of a ruptured follicular cyst of the right ovary with hæmorrhage. The pain persisted, so a pelvic laparotomy was performed under spinal anaesthesia on October 25. The appendix showed no significant disease. On exploring the pelvis, a gangrenous cyst was found attached to the right broad ligament. This was found to be an enlarged hydatid of Morgagni, attached to the fimbriated end of the right Fallopian tube. The pedicle was long and had undergone torsion. The pedicle and the cystic mass were dusky in colour and were attached to the broad ligament by adhesions which could be easily separated. The cyst and pedicle were removed, the adhesions being separated, and a routine appendectomy was done. The patient made a good recovery.

*Pathological report.*—"Cyst: This is a pedunculated portion of tissue which measures 4 cm. in length. At the proximal extremity there is a stalk measuring 0.5 cm. but this is reduced to a diameter of less than 0.2 cm. At the distal extremity it expands to form a somewhat club-shaped mass which is 0.9 cm. in greatest diameter. This tissue is firm and rubbery and the surface is dark brown in colour. On section, the cut surface of the stalk is dark brown and firm. The cyst is very thick-walled and contains a small amount of dark brown fluid.

*"Microscopic report: Cyst and Stalk.*—Sections of this organ show the stalk to be composed of dense fibrous tissue which is markedly congested and there is hæmorrhage into the tissues. The nuclei stain faintly and in some areas there is diffuse infiltration with pus cells

which are chiefly polymorphonuclear leucocytes. The wall of the cyst is thin, markedly congested and filled with hæmorrhage and again the cells are faintly stained. This cyst is lined by a single layer of low columnar cells and in some fields they are seen to be ciliated. The appearance is that of a cyst of the hydatid of Morgagni which has undergone torsion and is now congested and gangrenous."

Probably many similar cases have been seen in pelvic operations and have not been reported. Most of these cases are operated on with the tentative diagnosis of acute appendicitis. Most cases reported have been on the right side. Some have been confused with torsion of ovarian or parovarian cysts, while some have been mistaken for ectopic pregnancy, etc.

The hydatid of Morgagni is a small oval or spherical structure approximately 8 mm. in diameter located in the region of the tubal fimbriæ. Its origin probably represents a persistent proximal portion of the Wolffian duct. It is usually single, may be sessile but generally pedunculated. It is the latter type that undergoes torsion and gangrene with symptoms.<sup>2</sup>

Pain is the most frequent complaint, at first diffuse and colicky in character, later localizing in the lower portion of the abdomen but still tending to be intermittent. Fifty per cent of all patients reported had nausea and vomiting; 25% complained of dysmenorrhœa, relieved in the majority by operative removal of the gangrenous cyst. The patient generally does not appear very ill. Abdominal examination reveals tenderness deep and superficial in the lower abdomen, usually accentuated in the quadrant containing the disease. Occasionally there is abdominal distension and rigidity over the involved quadrant.

Temperature rarely exceeds 101° F., the pulse rate 100, white blood count rarely over 10,000. An appreciable number of cases revealed serosanguinous fluid in the abdomen, meriting inspection of the adnexa wherever this is found.

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One may begin one's professional life as a general practitioner, but one cannot begin as a family doctor, for this title implies a process endured and experience undergone. It further implies a personal integrity, a general liking for people, a natural sympathy and kindness, and a fair share of that most elusive and valuable of all commodities—wisdom.



## HAMARTOMA OF THE LUNG\*

J. H. Whiteside, M.D.

Toronto, Ont.

A discrete pulmonary shadow, demonstrable on the x-ray film and causing no symptoms, often presents a difficult diagnostic problem. Among the diagnoses that have to be considered are primary tubercle or tuberculoma, parasitic cysts, primary or secondary malignant tumour, and benign tumour.

J.E.K., a 46-year old gardener, reported to the outpatient department, complaining of a recent loss of his sense of well-being, following a respiratory infection. There was a history of a long-standing, slightly productive cough. A roentgenogram of the chest showed a clear-cut, rounded density in the base of the left lobe, laterally (Fig. 1). Investigation in hospital, including

it was considered that his symptoms were unrelated to the tumour. Subsequent examination of a chest film taken six years previously revealed the presence of a similar, but smaller shadow in the same location.

### DISCUSSION

Tumours of the lung of a similar histological appearance were first described by Chiari in 1883, and designated as lipo-chondro-adenomas. In 1904 Albrecht described a general group of tumours under the term "hamartomas", meaning tumour-like growths resulting from a faulty mixture of the normal components of an organ. Since that time, these tumours of the lung usually have been included in the group of hamartomas, although some authors still employ the term chondroma, or a descriptive variation of chondroma. The subject has been

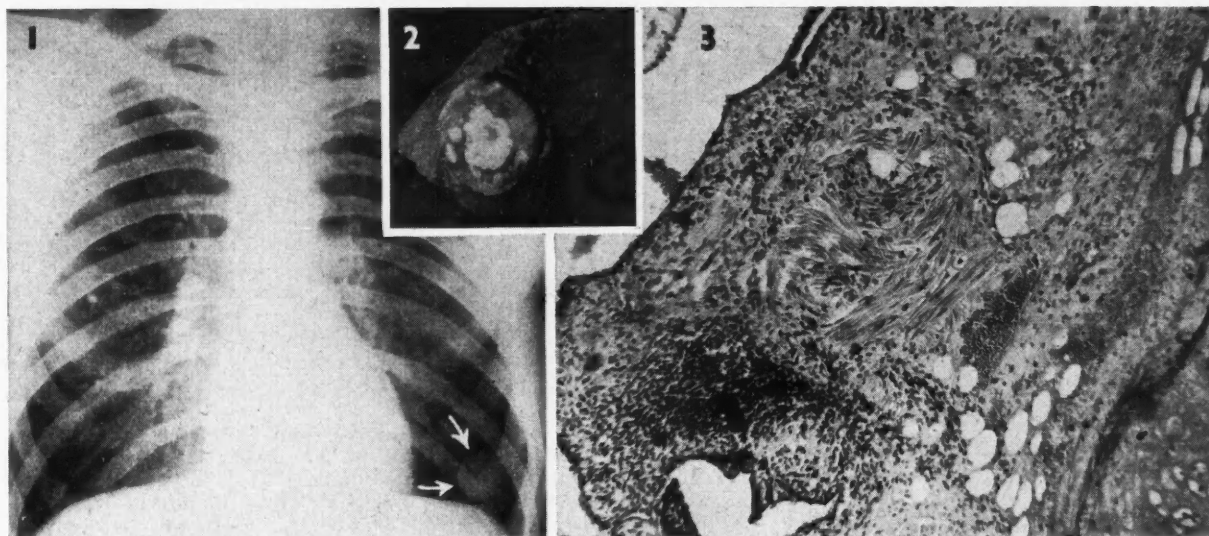


Fig. 1.—The tumour shadow is seen in the left lower lung field. Fig. 2.—Cut surface of tumour. Fig. 3.—A characteristic microscopic field showing the various tissue elements. x 100.

bronchoscopic examination, did not reveal further positive information. As primary malignant tumour, or tuberculoma, could not be excluded from the differential diagnosis, a resection of the involved area was carried out by Dr. R. C. Laird.

The specimen received in the laboratory consisted of a firm, white, egg-shaped nodule, 4 x 3 x 2 cm., loosely embedded in lung tissue, close to the pleural surface. The cut surface was composed of islands of pearly white tissue of cartilaginous consistency, separated by pinkish white fibrous tissue (Fig. 2). Histological examination showed masses of hyaline cartilage surrounded by a fibrous tissue stroma, and clefts lined by cuboidal epithelium. In the fibrous tissue were mingled fat cells, collections of lymphocytes, myxomatous connective tissue, and smooth muscle fibres (Fig. 3). The stromal tissue showed evidence of overgrowth, encroaching on and invaginating into the clefts. The capsule was thin and incomplete. There was no evidence of invasion into the surrounding lung tissue.

The patient's postoperative course was uneventful. At follow-up examinations his cough was unchanged, and

reviewed (in English) by Hickey and Simpson,<sup>1</sup> Goldsworthy,<sup>2</sup> and McDonald, Harrington and Clagett.<sup>3</sup> Reports of nearly 100 cases have appeared in the literature.

These tumours are usually incidental findings at necropsy. Symptoms referable to the tumours are seldom present, and an accurate ante-mortem, or preoperative diagnosis has been made in only a few cases. They are usually, but not always, found near the periphery of the lung, close to the pleural surface. The majority are less than 3 cm. in diameter, although larger ones have been reported. They are sharply demarcated from the surrounding lung tissue, and frequently have a lobulated appearance. They may cut with a grating sensation due to calcification. The cut surface

\* From the Pathological Laboratories, Sunnybrook Hospital, Department of Veterans' Affairs, Toronto, Director, A. J. Blanchard, M.D.

is lobulated, with islands of cartilage separated by fibrous connective tissue septa.

There is a striking similarity of the microscopic appearance in the reported cases. Islands of cartilage are nearly always present, and the cartilage is usually hyaline. These islands are surrounded by fibrous connective tissue septa, and by slit-like spaces lined by cuboidal epithelium. The epithelium may be columnar, and cilia are rarely noted. In the fibrous tissue adult fat cells, muscle fibres, myxomatous connective tissue, and collections of lymphocytes are frequently seen. Calcification of the cartilage is frequent, and true bone formation not uncommon. Evidence of malignant change has not been reported.

#### CONCLUSION

Hamartomas of the lung are benign tumours which only occasionally cause symptoms, and which seldom have a sufficiently characteristic roentgenologic appearance for a preoperative diagnosis to be made. The tumours have, however, a distinctive histological appearance. They contain only the elements found in a normal bronchus, but with an abnormality of quantity and arrangement of the various components. They are not simple chondromas such as might arise from the bronchial cartilage. Because they contain only bronchial elements, and are not found in the mediastinum, they should not be considered as teratomas. The most reasonable explanation would appear to be that they are the result of an abnormal development of the bronchial anlage.

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#### TRAUMATIC PNEUMOPERICARDIUM

A. W. Hogg, M.D.

Winnipeg, Man.

The object of this report is to put on record a proved case of traumatic pneumopericardium.

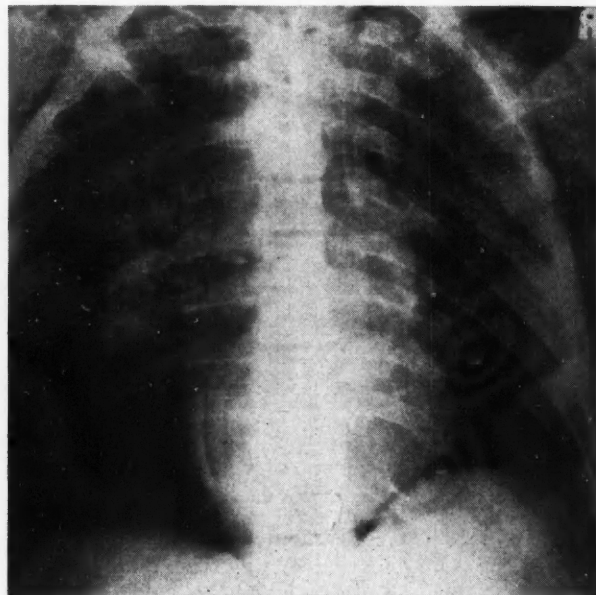
On November 22, 1949, Dr. R. Cohen called me to see the patient, a man of 58, who was suffering from severe widespread injuries, due to a highway accident thirty minutes previously.

The lesion of particular interest involved the left anterior thoracic wall, with multiple rib fractures. There was also fracture of the skull, with bleeding from the right ear. It was decided to carry out only essential treatment of the wounds, including debridement and repair, penicillin, and antisera. Fortunately, the patient

decompressed his cranial cavity by bleeding profusely from the right ear for three days. Within twenty-four hours extensive subcutaneous emphysema developed over the thorax and abdomen and within forty-eight hours this emphysema extended to the extremities.

His general condition slowly improved, although cerebral irritability was marked. On the sixth day, x-rays of the thorax showed, in addition to five fractured ribs, complete collapse of the left lung, with shift of the mediastinum and heart to the right, the left border of the heart being one inch to the left of the left border of the sternum. There was no free fluid shown in the pleural cavity.

The outstanding feature of the chest film was a vertical, clearish space approximately one-eighth inch in width, running from the diaphragm upwards along the



left border of the heart as high as the base of the heart. This was interpreted by the radiologist, Dr. Morrison, as being a pneumopericardium. It was considered advisable to aspirate some of the air from the left pleural cavity and on the twelfth day, 600 c.c. of air was removed.

Two days later, the radiologist reported that the pneumothorax had disappeared. The heart had returned to its normal position in the left thorax and the mediastinal structures had returned to their retrosternal position. The pneumopericardium had also disappeared.

On the twenty-first day, the patient's condition, relative to the thorax, was good but because of severe cerebral laceration the outlook for normal cerebration was not good.

#### TRAUMATIC DIAPHRAGMATIC HERNIÆ

J. D. Mills, M.D. and S. Kling, M.D.

Toronto, Ont.

Traumatic diaphragmatic herniæ are not common, but the appearance of the following cases on the general surgical service of Christie Street Hospital, has prompted our interest in this subject.

Diaphragmatic hernia is a term used to designate a condition in which the abdominal contents protrude into the thoracic cavity through a defect in the diaphragm. For purposes of expedience it may be classified in two main groups



—*non-traumatic and traumatic.* The latter may be subdivided into: (a) those due to indirect diaphragmatic injury; (b) those due to direct trauma.

There are no constant signs or symptoms which may guide one to the correct diagnosis in traumatic diaphragmatic hernia. The symptoms can be both bizarre and varied, for they depend on: (1) The particular abdominal viscera that are herniated and the degree of disturbance of their natural functions; (2) the degree of interference with normal respirations and circulation because of increased pressure in the thorax; (3) interference with the function of the diaphragm itself.

Two cases are presented here in considerable detail. Both represented very real problems in diagnosis and management and are described in the hope that they may be of interest and assistance to those encountering such cases.

The first patient, L.H.F., sustained multiple penetrating shell wounds of the left chest and back while serving with the army in October, 1944. He was operated upon at an advance surgical unit shortly after his injury but no details of this operative procedure are available. He was discharged from the army on February 28, 1945. At that time his only complaint was of slight weakness and some aching in his chest, but he was well enough to start work in a factory.

An x-ray of his chest taken at Christie St. Hospital at the time of his discharge from the army showed what appeared to be a very high left diaphragm (Fig. 1). This was interpreted as being due to paralysis of the left leaf of the diaphragm and was diagnosed as an eventration rather than a true diaphragmatic hernia. During the next three years he was able to carry on with very little time lost from work. Every one and one-half to two months, however, he became unduly tired and developed some aching in the front of the chest, which would necessitate bed rest for two or three days.

On January 19, 1948, there was a sudden onset of sharp, stabbing pain in the left upper lumbar region which was so severe that he went home and took to his bed. For the next few days, while still in bed, he noticed considerable dysphagia. He described the sensation as follows: "Food would go down to the middle of my chest and stick there". This difficulty in swallowing gradually disappeared. From then until his admission to hospital he had occasional bouts of nausea but no vomiting. He lost ten pounds in weight in the month prior to his admission to this hospital on February 16, 1948, almost three years to the week from the time of his discharge from the army, and three and one-quarter years after the date of his injury.

On physical examination at the time of his admission the only striking finding was a shift of the mediastinum to the right, with decreased air entry in the left lower chest. An x-ray film of his chest taken on admission looked much the same as the discharge film except for a fluid level considered to be in the stomach. X-rays taken following the ingestion of barium showed the stomach to be situated high up in the left chest (Fig. 2). Fig. 3 shows the sharp kinking of the lower end of the oesophagus which was no doubt the cause of his dysphagia. A barium enema (Fig. 4) showed the colon high in the left chest cavity.

At operation the abdomen was opened through a left paramedian incision. A large defect measuring approximately three inches in diameter was found in the mid-

posterior portion of the left leaf of the diaphragm through which three-quarters of the small intestine had herniated into the thorax. This was easily returned to the abdominal cavity by traction as no adhesions were encountered. The remaining viscera could not be removed from the chest by traction so the existing defect was enlarged for two inches in an anterior direction. It was then found that all of the transverse colon, the great omentum, the splenic flexure and part of the descending colon were also in the thorax. The transverse and descending colon were readily returned to the abdomen. The splenic flexure was adherent to the posterior wall of the chest and was freed with considerable difficulty. The stomach was then seen to be completely inverted and lay entirely within the chest cavity. The lower end of the oesophagus and pylorus were found to be situated at the level of the hernial orifice. The stomach was adherent to the posterior chest wall. By a combination of traction and blunt and sharp dissection, the adhesions were severed and the stomach also was returned to the abdomen. The spleen was now

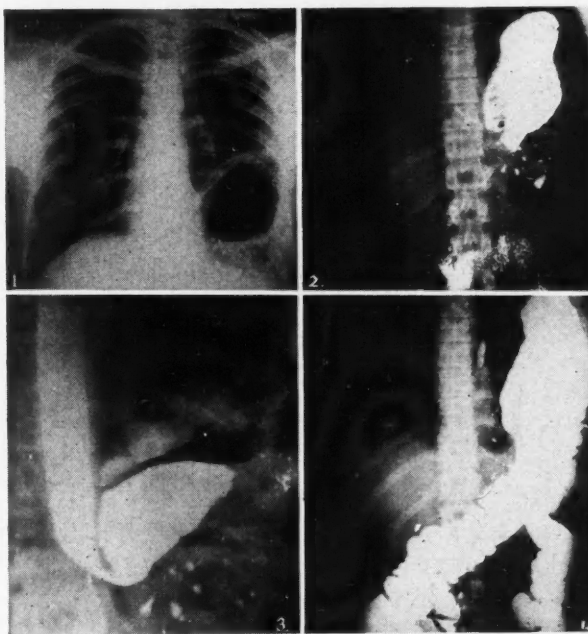


Fig. 1. (Case 1).—Showing what appears to be a very high left diaphragm. Fig. 2. (Case 1).—Barium meal showing stomach in left chest cavity. Fig. 3. (Case 1).—Showing the sharp kink at cardio-oesophageal juncture which caused dysphagia. Fig. 4. (Case 1).—Barium enema showing abnormally situated large bowel.

found to be densely adherent to the posterior chest wall in the neighbourhood of the gunshot wound. The splenic vessels were identified and ligated and the spleen removed. The left lung was found to be almost completely collapsed and the anaesthetist was unable to expand it. Many adhesions between the lung and chest wall were broken down and this permitted considerable re-expansion of the lung. In view of this satisfactory expansion and the lack of serious oozing, it was decided that closed drainage of the pleural cavity was unnecessary. The defect in the diaphragm was closed with interrupted mattress sutures of braided silk and the rent oversewn with fascia lata.

Postoperatively it was necessary to aspirate the chest at frequent intervals. Otherwise his convalescence was quite uncomplicated and an x-ray of the chest taken two months postoperatively showed the lung to be expanding nicely, although the expansion was limited by a thickened pleura. A barium meal taken three months after operation showed the stomach and duodenum to be in normal position. Barium enema showed the large bowel also to be normally situated. Following



his discharge he has been employed continuously without loss of time through illness. This patient was last examined six months following the date of his operation and he was completely well.

The second patient, G.M.H. received a gunshot wound to the left side of his face, right side of forehead, left chest and back and both legs, on August 23, 1944. He developed a hæmothorax and was assumed to have a penetrating chest wound, but had no operation on the chest. He returned to Canada and on December 31, 1944, was admitted to Christie St. Hospital, for plastic surgery. At a chest clinic review, prior to beginning the plastic surgery, the x-ray of his chest showed what was interpreted as an adherent left diaphragm (Fig. 5).

During the next year eight plastic operations were performed for repair of the damage to his face. During this time he complained at frequent intervals of transitory episodes of pain in the left lower chest but nothing startling was reported at any time. On February 23, 1946, while on a weekend pass, he developed an attack of generalized, crampy, abdominal pain, severe enough to double him up. The pain passed off in ten minutes and was replaced by a dull ache in the mid-

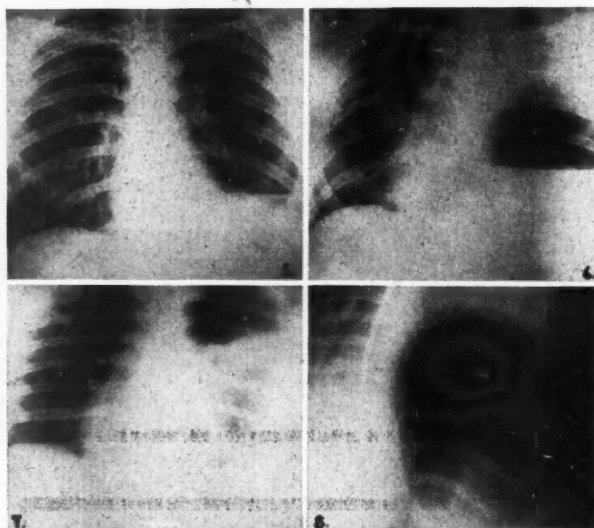


Fig. 5. (Case 2).—Shows what appears to be an adherent left diaphragm. Fig. 6. (Case 2).—Mediastinum shifted to the right and a fluid level in left chest. Fig. 7. (Case 2).—X-ray of chest showing gas in stomach once more. Fig. 8. (Case 2).—Shows a markedly dilated stomach. Tube has slipped out of the stomach.

abdomen, which lasted for two days. There was anorexia, nausea and constipation, but no vomiting.

On February 28, 1946, at approximately 1.00 p.m., the patient had teeth extracted under general anaesthetic. He was quite conscious by four o'clock. He then dozed again and two hours later was awakened by a crampy, severe pain in the epigastrium and under the left costal margin. He had severe vomiting which was thought to be post-anaesthetic in origin. The next day he looked acutely ill. His temperature was 102° F., pulse 130, respirations 30. White blood cells 27,000. He was cyanosed and the trachea was shifted to the right. There was restricted respiratory movement in the left lower chest, and dullness on percussion over the left chest below the third rib anteriorly and the 8th rib posteriorly. No breath sounds were heard over this area. There was slight distension and tenderness in the epigastrium. Normal peristaltic sounds were heard and the abdomen was otherwise negative. A portable x-ray of the chest was taken and this showed the heart and mediastinum to be markedly shifted to the right. A fluid level was present across the entire left chest at the level of the 9th rib posteriorly (Fig. 6), suggesting a collection of

gas and fluid in the left pleural cavity. As the gas did not reach the apex of the lung, it was obvious it must be separated from it by the diaphragm or some structure such as the fundus of the stomach. Therefore, from a radiological point of view this was not considered to be a case of hydro-pneumothorax. In any case, it was felt the large gas and fluid level would probably be due to dilated stomach containing fluid. Accordingly, a duodenal tube was passed into the stomach and 1,500 c.c. of chocolate-coloured fluid and large quantities of gas were aspirated. The patient felt much better at once.

Following this, a recheck x-ray of the chest showed the mediastinum to be well-centred. This verified our original surmise that the gas bubble and fluid level were present in a dilated stomach, but did not establish whether the stomach was above or below the diaphragm. A pneumo-peritoneum was considered in order to demonstrate the level of the left diaphragm, but this was abandoned because of the patient's poor general condition. We felt reasonably sure, however, that we were dealing with a diaphragmatic hernia. As the patient had improved with the aspiration of the stomach contents, and as there did not appear to be any distended loops of bowel in the chest, it was decided to postpone the operation until the patient was a better operative risk. The next day the patient was clinically improved. An x-ray of the chest showed the gas in the fundus of the stomach, higher than in the previous film, but still much less than in the original examination (Fig. 7). On the third day the patient showed further improvement. The abdominal pain was less severe and he was passing gas per rectum for the first time since the onset of his illness. However, on the fourth day he was again cyanosed and extremely dyspnoeic. He again looked acutely ill, with a temperature of 104° F., pulse of 120 and respirations of 35. Once more there was a tremendous shift of the mediastinum to the right and an x-ray of the chest showed a markedly dilated stomach (Fig. 8). The tube which had previously been in the stomach, had slipped into the oesophagus, and was no longer draining the stomach. This tube was pushed down into the stomach and gastric contents were aspirated. The patient immediately felt better. Another x-ray of the chest was taken which showed the mediastinum again well-centred and what appeared to be a massive left pleural effusion. The stomach had again apparently been decompressed as evidenced by the absence of a fluid level and gas. It was felt that surgical treatment was imperative, and this was now undertaken.

The abdomen was opened through a high left paramedian incision. The stomach, transverse colon, splenic flexure and the greater omentum were found to have herniated into the chest, through a transversely ovoid rent in the diaphragm. This defect was situated in the left dome of the diaphragm, just to the left of the oesophageal opening, and one inch from the posterior attachment of the diaphragm. The herniated viscera completely plugged the hole. It was found impossible to return any of the viscera to the abdomen by traction. The defect was therefore enlarged in an anterior direction for approximately two inches. When this was done clear fluid escaped into the abdomen. The greater omentum and splenic flexure of the colon were adherent to the posterior chest wall. They were freed with some difficulty and returned to the abdomen. The stomach was found to be about two and one-half times normal size. It also was returned to the abdomen after separating many adhesions between it and the posterior chest wall. The defect in the diaphragm was closed with interrupted mattress sutures of silk and chromic catgut. Closed drainage was established in the left pleural cavity.

Postoperative treatment consisted of oxygen tent therapy, intravenous therapy, continuous stomach aspiration, and intramuscular penicillin prophylactically. The chest drain was removed on the fourth day. The postoperative course was uneventful until the fifth day, when, after removal of the duodenal tube, it was observed that most

ingested fluids were being retained in the stomach. Up to the 20th postoperative day there was obstruction at the pylorus, or gastric atony or both, and it was necessary to maintain continuous tube drainage of the stomach. The patient's blood chemistry was maintained at normal levels by intravenous infusions of saline, glucose, amino-acids and vitamins. Jejunostomy was being seriously considered for feeding purposes, when on the 20th postoperative day, bile was aspirated through the duodenal tube, indicating that it had passed through the pylorus. Some barium was put down and was also shown to go through into the small bowel. The patient's postoperative course from this point on was uneventful, and he was finally discharged from hospital.

The patient was examined six months after operation. He appeared to be in excellent health, and x-rays revealed the stomach, small bowel and large bowel to be normally situated.

#### CONCLUSIONS

In the first case the hernia was obviously of long duration. The increase in symptoms was probably produced by a more or less sudden increase in the visceral content of the chest, no doubt the stomach and lower end of the oesophagus, as evidenced by the dysphagia. Some difficulty was experienced in closing the abdomen following return of the viscera to the peritoneal cavity. It is our opinion that early operation should be undertaken in this type of hernia through the diaphragm because of the fact that the peritoneal cavity loses its ability to contain its viscera. Case 1, Fig. 2 shows the low diaphragm on the right side. The left chest is occupied by the abdominal viscera and almost completely collapsed left lung. Thus the right lung has taken on the greater part of the respiratory function and encroaches upon the belly cavity. After reduction of the hernia from the left chest, there is still a partial collapse of the left lung, and the crowding of the viscera into the peritoneal cavity results in pressure on the right diaphragm from below, producing great respiratory embarrassment because of the encroachment on the functioning right lung until such time as a readjustment can occur due to re-expansion of the left lung.

In the second case it is our opinion that operative treatment should have been undertaken immediately after decompression of the stomach and prior to the second acute episode, for the following reasons: (1) the patient was then in better condition than at the time when operation was finally performed; (2) the danger of perforation of the stomach or strangulation of small intestine which often is incarcerated in the chest, together with the stomach and colon; (3) the gastric atony which followed, presumably due to trauma of the stomach or its nerve supply,

and which in this case, became one of the most serious features.

#### SUMMARY

Two unusual cases of traumatic diaphragmatic hernia are presented. The authors conclude that when a case of traumatic diaphragmatic hernia is diagnosed, operation should be undertaken at the earliest date compatible with the patient's general condition, because delay only increases the hazard. Although there are no constant diagnostic signs and symptoms, the diagnosis will be made more frequently and earlier if one keeps the condition in mind. It is important to remember that the symptoms may not appear for several years after the initiating or pre-disposing trauma has occurred, as evidenced in both these cases.

#### AUREOMYCIN AND MUMPS

S. J. Shane, M.D., F.R.C.P.[C.] and  
G. W. Sodero, M.D., F.A.C.S.

Sydney, N.S.

With the advent of the newer antibiotics, chloromycetin and aureomycin, opportunities have arisen for the treatment of certain virus infections with these preparations. Several reports have already appeared in the literature, suggesting that certain viral diseases or diseases caused by virus-like organisms may be amenable to treatment with one or other of these drugs. Woodward<sup>1</sup> reported that primary atypical pneumonia, which is tentatively considered to have a viral etiology, has been successfully treated with both chloromycetin and aureomycin. Binder and Stubbs<sup>2</sup> and Finland and co-workers<sup>3</sup> have reported that aureomycin given by mouth has a definite, beneficial effect on the course of herpes zoster. Kalz *et al.*<sup>4</sup> were apparently highly encouraged by their results in the local treatment of herpes zoster with an aureomycin film. These results have not been corroborated by all observers,<sup>5</sup> although we ourselves have seen one dramatic recovery in a case of facial herpes zoster treated with oral aureomycin. Perry and Martineau<sup>6</sup> noted striking results in the treatment of eczema vaccinatum with aureomycin. The early apparently successful results obtained with aureomycin in virus-like and rickettsial diseases such as lymphogranuloma



inguinale, psittacosis and typhus are well known.<sup>1, 7</sup>

These reports have stimulated an intense interest in clinical trials with chloromycetin and aureomycin in various viral infections. It is therefore considered that a case in which a true viral infection, namely mumps, developed in a patient who was under full dosage with aureomycin for a bacterial infection, is of sufficient interest to be reported.

R.D., a 4-year old white male was admitted to the City of Sydney Hospital on January 13, 1950, because of cough, right chest pain and fever. Three weeks prior to the onset of symptoms he had undergone a tonsillectomy, which was described by the surgeon as being free from complications, although for several months prior to this, the patient had had a mild chronic upper respiratory infection.

Two weeks prior to admission, the patient's mother noted that he was feverish and had a dry cough. He was seen at home by one of us (G.W.S.) on January 4. No abnormal physical findings were noted, and palliative treatment was prescribed. After a few days, no improvement was noted, and on January 13, physical examination revealed evidence of a right pleural effusion. The patient was immediately admitted to hospital, an unsuccessful attempt was made to obtain sputum for bacteriologic investigation, penicillin therapy was instituted and a diagnostic thoracentesis was performed. The pleural fluid was clear, and sterile on culture. Thoracentesis was repeated on several occasions, followed by the instillation of penicillin, 100,000 units, into the pleural cavity. No dramatic results attended this therapy.

In view of the history of a recent tonsillectomy it was considered that the patient was suffering from either an aspiration pneumonia or a lung abscess, and it was felt that surgery might be indicated in the near future. However, it was decided to give the patient the benefit of a short course of aureomycin therapy, with surgery to be considered if the need arose. Accordingly, from January 22 to 29, the patient received aureomycin by mouth in a dosage of 0.5 gm. every six hours, comprising a total of 14.0 gm. There was a slow fall in temperature, apparently by lysis, but in general, the clinical and roentgenologic findings did not change appreciably. At the end of this period of therapy, it was considered that further investigation was indicated, preliminary to probable surgery, and on January 30, the patient was prepared for transfer to the care of a thoracic surgeon.

On that date the patient was noted to exhibit the symptoms and physical findings of a typical case of mumps. The transfer was completed, and the child recovered from his mumps, and subsequently, without surgery, from his pulmonary infection. Careful enquiry elicited the information that there had been a case of mumps in the patient's household about three weeks prior to admission to hospital.

#### COMMENT

It is obvious from the time relationships noted, that the patient received a full course of aureomycin during the latter part of the incubation period of mumps, and that the aureomycin had no suppressive effect on this viral infection. Despite the results which have been reported in other viral infections, this constitutes presumptive evidence of the inefficacy of

aureomycin against the mumps virus. It is hoped that further reports, corroborative or otherwise, will soon appear in the literature.

#### SUMMARY AND CONCLUSIONS

1. A case is reported in which mumps developed during a course of aureomycin therapy.
2. The inefficacy of aureomycin against the mumps virus is suggested.

NOTE.—Since submission of this paper we note the report of Langley and Bryfogles on the same subject.

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### ACUTE FULMINATING MYASTHENIA GRAVIS IN CHILDREN\*

D. L. A. Bastedo, M.D.

Toronto, Ont.

Myasthenia gravis in infants or children is an uncommon disease; its occurrence in an acute fulminating form is rare indeed, and to date only three such cases have been reported.

Lieberman<sup>3</sup> in 1942, reported myasthenia gravis in a five year old child in which the rapid progression of respiratory distress was the initial and outstanding feature; response to prostigmine was dramatic. Keynes<sup>7</sup> in 1949 reported two similar cases in children, age 2½ years and 4½ years, who were admitted cyanosed, helpless, and moribund; both showed immediate and dramatic response to prostigmine therapy. These two cases were the first of their kind to be recognized in Great Ormond Street.

R.S., a 10 year old, white, male child was from a family in which both parents and 3 siblings, age 9 years to 17 years, were alive and well. There was no family history of weakness, lassitude or sudden death. The birth and developmental history was normal; the child had always enjoyed full physical and mental activity.

This child was considered well until 18 hours prior to admission to hospital, when he began to complain of "soreness" in his eyes and throat, for which his

\* From the Hospital for Sick Children and the Department of Paediatrics, University of Toronto, under the direction of Alan Brown, M.D., F.R.C.P.(Lond.).



family put him to bed. Twelve hours before admission he started to complain of difficulty in swallowing, and of generalized abdominal pain. Two hours before admission there was complete inability to swallow, and respirations became gasping and weak; he became increasingly cyanosed, and was subsequently rushed to the Hospital for Sick Children, because of his apparent generalized collapse.

The general impression in the admitting department was that of a well developed, well nourished and yet cyanosed and moribund boy, having shallow, gasping respirations. The temperature was 98° per rectum; the pulse was 65 per minute; the respiratory rate was 18 per minute.

The throat was slightly injected, but was filled with a great quantity of thick mucus, requiring removal by suction. The neck was flaccid, with no element of meningeal irritation. There was moderate supraclavicular, intercostal and epigastric indrawing, with minimal abdominal movement. The lungs were clear to auscultation and percussion; the abdomen suggested a vague tenderness in both lower quadrants. The fundi were normal. The blood pressure was 100/50, with heart sounds regular, and of good quality. Due to the critical condition of the patient, a thorough neurological examination was not done at this time.

**Laboratory investigation.**—Hgb. 14.4 grams; white blood count 10,400; urine, 4 plus albumin, 3 plus sugar, normal microscopic, on admission; completely negative 12 hours following admission; lumbar puncture showed clear cerebrospinal fluid, containing 3 lymphocytes and normal protein; potassium, 4.7 mEq/l (normal = 4.5 to 5.5 mEq/l); chest x-ray, normal lung fields, no evidence of any enlarged masses suggesting a thymoma; normal anterior mediastinal area.

**Course.**—The overall picture of collapse, respiratory difficulty and bulbar weakness, was suggestive of an acute bulbar poliomyelitis or some type of encephalitis. However, with a normal temperature, normal spinal fluid, normal white blood count, and absent meningeal signs, such a diagnosis was unlikely. He was totally unable to swallow and required continual supervision with frequent suction of pharyngeal secretions; he could count to 16 or 17, but only with a faltering, tired voice, he was unable to open and close his jaw more than half a dozen times without showing gross fatigue. With these signs it was felt that asthenic bulbar palsy, or myasthenia gravis, would have to be ruled out. He was, therefore, given ½ mgm. of prostigmine bromide subcutaneously. Within fifteen minutes of his prostigmine injection, he was able to sit up and drink a glass of fluid with no evidence of regurgitation; he could count to one hundred in a clear, tireless voice; he could make prolonged chewing movements without signs of fatigue. Two and one-quarter hours after prostigmine administration, respirations once more became weak and swallowing became impossible, with return of subjective alarm and apprehension. Complete recovery was produced by the subcutaneous injection of 1 mgm. of prostigmine bromide, which was then repeated at four hour intervals. Withdrawal of therapy the following day brought on a similar recurrence of complaints.

Following this dramatic therapeutic trial, he was started on oral prostigmine bromide, 15 mgm. every 6 hours, given with ½ gr. of ephedrine sulphate to enhance its effect. On this dosage, there were no toxic side effects of headache, vomiting or diarrhoea, and he was capable of carrying on normal ward activity, without evidence of fatigue. Complaints of transient diplopia were corrected by slight alteration in the times of administration of the drug.

He is now being followed through the out-patient department, where his drug dosage has been reduced to 15 mgm. of prostigmine bromide and ¼ gr. of ephedrine sulphate, three times daily. He is enjoying full, tireless activity, and at present, six weeks following the onset of his illness, he appears completely well.

#### COMMENT

Ford<sup>1</sup> states that myasthenia gravis is so rare in childhood that the diagnosis must be regarded with suspicion unless the case is quite typical. Since first described by Wilks in 1877, approximately 44 cases in children have been recognized and reported.<sup>2 to 7</sup> Levithan<sup>2</sup> in reviewing the literature up to 1941, found 34 cases; all had insidious onsets with complaints of characteristic fatigability, visual disturbances and gradual progression. Of the cases reported since that time, three have had onsets of alarming rapidity.<sup>3, 7</sup>

In view of the case reported here, and those of a similar nature reviewed, the possibility of acute myasthenia gravis should be considered in any fulminating or unusual respiratory emergency, and excluded only after a therapeutic test with ½ mgm. of prostigmine bromide subcutaneously has been tried. Acute bulbar poliomyelitis, encephalitis, asphyxia or an acute pneumonia might simulate such a picture. It is probable that acute myasthenia gravis is more common than the few reported cases would indicate, and that such cases dying in the past have been unrecognized.

#### SUMMARY

1. A case of fulminating myasthenia gravis in a 10 year old boy is reported.
2. Forty-four cases of myasthenia gravis in children have been reported to date; only 3 of these have had a similar acute onset.
3. A trial dose of prostigmine bromide should be given to all acute respiratory disturbances in which the nature of the causative factor is not fully established.

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ANTIRHEUMATIC ACTIVITY OF ASCORBIC ACID IN LARGE DOSES.—In 7 cases of acute rheumatic fever a rather dramatic response was obtained to the oral administration of 1 gm. ascorbic acid four times daily. The mechanism of action of the ascorbic acid is not understood; it is not felt to be the result of correction of a vitamin deficiency and the authors suggest that the large dose of ascorbic acid may influence the activity of the adrenal cortex.—Massell, B. F., Warren, J. E., Patterson, P. R. and Lehmus, H. J.: *New England J. Med.*, 242: 614, 1950.

## SPECIAL ARTICLES

### THE STATUS OF THE PATHOLOGIST IN THE PROVINCE OF QUEBEC

*Prepared by the Quebec Association of  
Pathologists*

In 1945, the pathologists of the Province of Quebec, in a plenary meeting organized an association known as the Quebec Association of Pathologists.

The purposes of this organization were threefold: (1) To bring together, in friendly association, the pathologists of the Province at regular intervals in order to exchange scientific ideas. (2) To study the matter of the training of pathologists with a view toward maintaining a high standard of professional efficiency amongst those practising the specialty of pathology in the Province of Quebec. (3) To promote the interests of the pathologists of the Province of Quebec by enquiring into the function of the pathologist in his relations and services to hospitals, Universities, public health bodies and the community at large.

To further these purposes, the Quebec Association of Pathologists became incorporated under the Professional Syndicates Act in 1947. Since its inauguration the Quebec Association of Pathologists has devoted considerable time and energy to the study of the status of the pathologists in Quebec and Canada as a whole. It is interesting that a national organization of Canadian pathologists with similar aims and purposes was inaugurated at the Canadian Medical Association's annual meeting in Saskatoon on June 15, 1949.

There can be no doubt that the number of qualified pathologists in the Province of Quebec is entirely inadequate to serve the total hospital beds in the province. A cursory survey reveals the fact that for a total of approximately 30,000 hospital beds in the Province of Quebec, there are less than 35 qualified pathologists in the Province. Thus, in the Province of Quebec, there are a number of hospitals of 150 beds or more in which no intramural pathological service is available, a condition which is deplorable in this age of modern medicine.

In the face of this deficiency which appears to be increasing, together with an ever-enlarging need for the services of pathologists, it seems desirable to enquire into the status of pathologists in the Province of Quebec to find out why more young men are not attracted into this specialty or why, when they have been trained as pathologists in Canada, they do not remain here. It may be pointed out that in order to fill several pathology appointments in Canada, men have been imported from Great Britain and the United States while, at the same time, a considerable number of young men partially or fully trained as pathologists in Canada have migrated to the United States where some of them have attained distinction. These are men that Canada can ill afford to lose.

No serious objections can be raised against the view that in present-day medicine the laboratories play a most important part in the modern hospital. To contemplate the practice of scientific medicine without them is unthinkable. It also follows and, indeed has been found to be true, that the quality of general medical practice in a given hospital and community increases with the excellence of the laboratory services that are available. It must, therefore, follow that the quality of the work done in such laboratories is directly dependent upon and proportional to the character and degree of scientific training of the medical personnel of these laboratories.

The postgraduate training of a physician in the specialty of pathology is an exacting and lengthy one. In Canada as well as Great Britain and the United States, a postgraduate training of not less than five years is required before the candidate is eligible to try the examinations of the qualifying Board. This training comprises the completion of an internship of not less than one year in a hospital approved by the Council of Medical Education; a period of study, exclusive of internship, of not less than three calendar years in an institution or department of pathology recognized by the qualifying Board as competent to provide satisfactory training in the field of pathology and, finally, a fifth year of training or practice in pathology. The training includes the following: (1) graduate training for one year in the various phases of clinical pathology which deals with bacteriology, immunology, biochemistry, parasitology, hæmatology and clinical microscopy in relation to the diagnosis, prognosis and treatment of clinical disease: (2) training and experience of not less than two years in pathologic anatomy which deals with the morphological aspects of disease.

The character and nature of the work in pathology necessarily attracts that type of young man with a decided leaning toward the basic or scientific aspects of disease. It is in precisely these fields that many of the advances in medicine have been made. Much of the improvement in the diagnosis and treatment of disease that has occurred in the past thirty years is directly attributable to laboratory procedures and one can almost correlate the type of practice in a hospital with the character of the laboratory staff and its relation to the physicians using it.

But the pathologist in the modern hospital is decidedly more than a mere laboratory man. He is first and foremost a physician whose work is essentially of a consultative nature. He constantly collaborates in establishing clinical diagnoses. Through his knowledge of the natural history of disease he is able to render prognoses, and frequently does so. Through post mortem examinations he confirms or invalidates in part or in whole the final clinical



diagnoses; helps the clinician in attaining a better insight and correlation between symptoms and morbid changes; gives an explanation of certain failures of surgical procedures and collects material and data for teaching and research purposes. By means of clinical-pathological conferences he helps in the training of interns and staff members and aids in the attainment of high diagnostic standards. By the very nature of his work he is indispensable in every tumour clinic, which could not exist without his collaboration. Because of the frequent positive nature of his reports, his conclusions form much of the groundwork of hospital records as well as of all national statistical data. By his assistance in diagnosis the pathologist concurs *ipso facto* in treatment inasmuch as the latter is dependent upon the former. Thus the pathologist is first and foremost a consulting physician discharging many medical duties and his rôle is indispensable not only in medical research but in the practice of modern medicine. His rôle is particularly dominant in the current fight against cancer.

It is a lamentable fact that too often the pathologist is taken for granted and is treated, not as consultant and equal, but as a mere laboratory technician to whom material is turned over with the most meagre information. It is precisely this attitude that deters many young men with high principles from entering this specialty. In contrast to other specialist consultants, the pathologist remains unknown to the patient who rarely has any idea of the nature and importance of what he does. This lack of physician-patient relationship is another of the deterrents working against the entry of young physicians into the specialty of pathology. Through lack of sufficient time, the pathologist could not and, indeed, should not see all patients to whom he renders service, but by a more frequent pathologist-patient relationship and by acquainting the patient with the behind-the-scenes consultations rendered by the pathologist, the patient would more readily understand the importance of his work and the necessity of laboratory fees. The pathologist renounces general practice in the ordinary accepted sense of the word, but not the right to be acknowledged as a medical consultant. The public at large should be made familiar with his rôle in medicine. Far from being detrimental to the practitioner, public recognition of his rôle will allow earlier, wider and better treatment of disease in the community.

While it is true that the specialty of pathology can be carried out as a private practice (witness the increase in the number of private laboratories being operated by competent pathologists in the United States), it is in group practice and particularly in hospitals that the greatest number of pathologists utilize their talents. As a result, the majority of trained

and qualified pathologists serve hospitals where an employer-employee relationship is established. Their relationship is usually acknowledged implicitly by the payment of a fixed salary to the pathologist for his services to the hospital. This relationship between hospitals and pathologists is in sharp contrast to that of various other clinical specialties (excepting perhaps, radiologists and anaesthetists) who enjoy autonomy and unlimited remuneration dependent upon their ability and industry. These facts do not escape the notice of young medical graduates who contemplate entering a specialty. Not infrequently such fixed salary arrangements between hospital administrations and pathologist are independent of an ever increasing increment of work performed in the hospital laboratories, much of this work originating from patients outside the hospital, so that the services of the pathologist may be literally sold by the hospital and for this the pathologist receives no return. This raises the very interesting question as to whether hospitals, in effect, practise the art of medicine, a subject receiving much attention in various States (e.g., California) and by the American Medical Association. While some hospitals administrations permit full-time pathologists to act as consultants and to present accounts to patients directly for laboratory services on material originating outside the hospital, there are still many who take the attitude that the employee (i.e., pathologist) should simply perform all work arbitrarily assigned to him for the fixed salary paid him by the hospital, a salary that usually is considered to be below the net income of the clinical specialists.

Today there is a mounting unwillingness on the part of full-time hospital pathologists to accept a fixed salary without regard to the increased increment of services rendered by the laboratories under their supervision, and a number of methods have been devised whereby the pathologist shares in the income of the laboratory augmented as a result of his effort. It is a fact that young well trained and qualified men entering the specialty of pathology anticipate much higher returns for their services than those received by men already well-established who accepted the lower compensation prevailing in their times. Unless an adequate return for an elaborate and lengthy training in this arduous field is assured, the likelihood of sufficient numbers of well trained men entering this specialty is rather remote.

In the Province of Quebec a certain number of hospitals of 150 beds or over have no properly qualified pathologists. This at once makes these hospitals ineligible for approval by any of the recognized approving agencies and makes them unsuitable for intern training. It is obvious that the routine control and check of work in such institutions as well as the



services rendered to the patients are distinctly below acceptable standards. Whatever pathologic work is farmed out from such institutions to nearby properly staffed hospitals throws additional work on the pathologists of those hospitals who may receive no remuneration for these extra services.

Recently, the Quebec Association of Hospital Medical Boards has suggested that all surgical specimens removed in hospitals where no pathologist is on the staff, be sent to various qualified pathologists in this Province for histologic examination. The Quebec Division of the Canadian Cancer Society is seeking to make available histologic examination of tissues of all patients suspected of having cancer in the Province of Quebec. Should these plans be adopted, it would at once require the services of a considerable number of qualified and well-trained pathologists to cope with the volume of work that could be expected. Such trained men in the numbers required simply are not available and this would mean that the work would have to be done by those men already available.

It is obvious, therefore, that in the Province of Quebec and perhaps, in Canada generally, there is both a shortage of and need for well-trained and qualified pathologists. It is equally obvious that insufficient numbers of young men are being attracted to this specialty. The reasons for this disinclination of young men to enter this particular specialty have already been touched upon.

In the matter of the training of pathologists, the Quebec Association of Pathologists is not unmindful of its own responsibilities. Its members are willing and ready to do their part. Neither is it unmindful of the generous facilities already provided for this purpose by the hospitals and universities of the Province, nor of the alertness, to this problem, by the Federal Minister of Health and Welfare and the Provincial Minister of Health of the Province of Quebec, whose governments have already provided for financial assistance by grants of monies for the training of professional personnel. To encourage brilliant young men to laboratory practice it is necessary that they be given the same rights of practice as all other physicians including the right of consultation and the right to set their own fees for services rendered. This means that the hospital must charge by some means or other what is necessary to cover their costs in such service. It is unjust to pursue the present practice in making a profit on laboratory work, which is really making a profit out of the physician in charge in order to cover a deficit incurred by the treating of patients in the wards of the hospital.

Analysis of this entire problem suggests: (1) that the financial returns to a fully trained and qualified pathologist and director of laboratories should be increased to an equitable level relative to the earnings of other specialists. (2) That the

status of the pathologist amongst his colleagues must be raised to a point where his opinions and place in the medical hierarchy are equivalent to those of any clinical specialist consultant. He should not be regarded merely as a super-technician either by his colleagues or the hospital administration who employs him. (3) That he should enjoy a greater patient-physician relationship in consultative practice than has hitherto been the case and that he should be permitted to receive professional fees for those consultations. (4) That his salary should automatically be increased in proportion to the increase in the work of his laboratory.

#### SUMMARY

The Quebec Association of Pathologists stresses the view that the pathologist because of his outlook, training and special methods of investigation, must be considered as a medical specialist who, because of his functions, acts as a consultant. In the face of a growing shortage of men in the field of pathology, together with an increasing need for their services, it is held by the Quebec Association of Pathologists that in order to attract desirable candidates for this specialty an improvement in the professional and an immediate improvement in the economic status of the pathologist must be brought about. It is only by these means that likely young men will be willing to make their careers in pathology in the numbers that are required.

#### ON THE PATIENT\*

Jean Saucier, M.D.

*Montreal, Que.*

It is now customary each year, at the occasion of the annual meeting of this Division of the C.M.A. for the provincial President to deliver an address, or rather a short talk. The main topic of his speech is never prescribed by his committee. It is entirely left to his own choice and fantasy. I already have had the pleasure and privilege of listening to several remarkable addresses by my predecessors and they have filled me with an incredible and very understandable awe. I have in mind at the present moment the most clever pleading of Dr. Murray Stalker for the country doctor and his illuminating remarks on rural medicine. He had an excellent topic and he knew perfectly well what he was talking about. I have wondered a long time what, when my turn comes, would be the best theme. I have thought of the aging physician but I soon remembered that the subject had been given a place in our Journal some years ago. However, that theme is far from completely covered and could

\* Presidential address at the Annual Meeting of the Quebec Division, C.M.A., at Quebec, May 5, 1950.

be discussed again with profit under different angles, *i.e.*, under the psychological and pension aspects. I shall leave to others who have more leisure than I have the fascinating task of presenting to you the treacherous journey down-hill of the doctor who has not learned to grow old nicely. I could have chosen also the subject of Health Insurance but I feel very certain that you have reached the point of saturation on hearing about old and new plans of Health Insurance. I could have written many paragraphs on Canadian or American medicine but my experience has taught me that there existed more dynamic discussions. I could have told you what your Division did for you during the past year but that would have been either too long or too short. Finally, I could have presented a short article on the good and bad effects of the recent therapeutic discoveries and someone would have moved a vote of thanks for my loyal effort to synthesize the already known; fortunately, that kind of honour does not appeal to my fancy.

I had pondered a full quarter of an hour over my problem when it suddenly occurred to me that the most simple topics were often those that are ignored or overlooked. Simple things are sometimes baffling because they are so self-evident. After a few minutes I had discovered a main theme: *our patient*, the unknown or incompletely explored phenomenon, and, as a short addendum, *the boundaries of medicine*.

I do not intend to deliver a sermon or an academic thesis. I shall feel more at ease and my remarks should be more flexible if I present them as simple considerations as if I were a day-dreamer thinking aloud.

The patient is an individual of whom some law-abiding and God-fearing physicians still think with some kindness. For many however, the patient is a test-tube, a vague unimportant entity, an instrument for scientific advancement, a source of income, an unexpected heaven-sent product to test the effects of cortisone, an excuse to win the applause of the students, a laughing-stock to whom the most impertinent questions are addressed, an unknown person for whom a lobotomy is cheerfully recommended, an illiterate foreigner that one bullies at the out-door clinic, a moron that one ridicules, a nice-looking girl to whom advice is given that often deviates considerably from the accepted code of ethics, an old man who is received with an attitude of pity that is a trifle too loud, etc.

The patient is a human person that has temporarily or definitely lost his keenness to struggle and his ability for repartee. The patient is a person that has become very suggestible and abnormally emotional; it is someone who suffers in his body or in his mind or in both his body and his mind at the same time. On many occasions, a patient often means a very tedious prob-

lem to solve. In all cases a resistance must be conquered and obstacles must be subdued because patients always carry with them the consequences of the troubles for which they come to the doctor. The examination of a patient leads to an inquiry about several persons who often are or should be patients themselves, thus creating the need for other inquiries.

The patient is most of the time worried in various degrees. He has the right to beg for appeasement, even during the night, and he also has the right to be answered with a little sympathy.

The patient is a bizarre person who solicits relief. We can easily imagine our own anxiety if we remember our reactions when disease pays us a short visit. One could write a good comedy if not a roaring vaudeville on the pitiful picture of the sick doctor, the unknown patient about whom his colleagues have not yet dared to write. If doctors could remember their own despondency when they were faced with a serious illness actual contact with their patients would not be a problem any more.

The patient is a very unfortunate being who entrusts his doctor with his secrets. In the coldness of the examining room he not only leaves off his clothes but he also gives up his mask. This is a double humiliation to which we pay very little attention, because we take for granted that all patients should submit automatically to elementary routines, the so-called rules of the game. If the patient is a pauper one can imagine the extent of his sacrifice; on the other hand, if he belongs to the well-to-do category his pride may be hurt to the same extent. I know only of the fools and of some psychotics who are proud to exhibit their symptoms. In the majority of cases illness and its acceptance always give rise to distressful sentiments and to painful reactions.

It may happen that the patient feels that the doctor takes him for a bore. Such is frequently the case in out-door clinics, however, it may also happen in private offices.

Many patients accept without recrimination the verdict of the omnipotent doctor. Others would like to have a few explanations but the doctor is too big and too distant; they would not dare to ask a question or discuss a prescription. Others take a chance and will ask if their lives are in immediate peril. Those are very human questions and it is most likely that we would ask them if we were sick.

Some patients are operated on by three surgeons who accomplish impersonal and stereotyped tasks. Others never see their surgeons again after the operation. Others are bled to exhaustion after innumerable tests that are all carried out the same day, then they are refilled to capacity by substitution fluids. Some are given physiotherapy by masseuses, nurses and technicians who do not utter a single word during their mysterious work. I know patients who



have been psychoanalyzed in public. Others are rushed away after the semblance of an examination because they are unsightly, dirty, misshapen or simply old, while the nice-looking, the clean, the harmoniously-built and the younger ones are pampered and given kind advice.

The patient is often a timid or a prejudiced person. It is extremely easy to increase his timidity and to multiply his prejudices. There are patients who suffer more after they have left the doctor's office than before the consultation. It takes so little to suggest the wrong direction. For instance, Workmen's Compensation cases with paranoid tendencies have often received so much encouragement and approval of their complaints by their family doctor that their recriminations become crystallized into confirmed psychoneuroses.

Some patients talk too much while others talk too little. Many are under the impression that the doctor should discover and foretell every disorder, and because of that prejudiced belief, they will not divulge some hidden and embarrassing manifestations. When the doctor has failed to examine some obscure area of their anatomy, or has not asked indiscreet or too inquisitive questions they take for granted that everything is in order. I have often heard at the out-door clinic the following statement: "After all, you're the doctor, you should know!"

Acute patients are generally well taken care of because they present no immediate problem except correct diagnosis and good treatment. This is not always true for the chronic patient, whether he is at the hospital or at home. An illness that has lasted too long becomes cumbersome, costly and heavy to bear. Is it any lighter for the sufferer? The chronically ill is more sensitive to compassion than the acutely sick because an enormous amount of reflex compassion has been mobilized for the latter while the former does not stir fresh emotions any more. The dynamic attitude of the medical and nursing staffs in the presence of the acute patient could be called conditioned charity, because the stimulus, which is the acute disorder, is always the same and happens to be very strong; whereas when the condition passes on to the chronic phase the stimulus loses its intensity of power and the conditioned reflex response becomes dull and gradually disappears. If the patient is declared incurable, one becomes the witness of oblivion *in vivo* and of anonymous labeling. If anyone should doubt this he has only to visit any hospital for chronics to be convinced. Patients have then lost even their names. They are designated by the number of their bed and the name of their disease. One no longer looks for Mr. John B. Jones the carpenter, father of 6 children and living in Three-Rivers, but for the interesting *Friedreich*, number 86, on the third floor.

The patient who lends his body to clinical teaching is dreadfully alone among students and observers, who are passionless and indiscreet by definition; in fact they came to the hospital to extract the maximum knowledge from the subject that has been committed to their observation. When the questions become too frequent and too personal he feels still more alone and cornered. When the clinician forgets to cover him up he shivers abominably in the desolation of his anonymity. If one examines him a little too long one rarely offers a kind word or an excuse. One never thanks him. Such a moving scene occurs daily. It has become part of a routine; it has become too trivial to evoke the least symbolism. Clinics at the bed-side of the patient often give rise to absurd remarks; they frequently terminate very far from the initial theme.

We would be almost surprised by more charity. Did you know that Charity does not astonish God Himself, as Charles Péguy says:

"La charité, dit Dieu, ça ne m'étonne pas.

Ca n'est pas étonnant.

Ces pauvres créatures sont si malheureuses qu'à moins d'avoir un cœur de pierre, comment n'auraient-elles point charité les unes des autres.

Comment n'auraient-ils point charité de leur frères.

Comment ne se retireraient-ils point le pain de la bouche, le pain de chaque jour, pour le donner à de malheureux enfants qui passent.

Et mon fils a eu d'eux une telle charité.

Mon fils leur frère.

Une si grande charité."

There are also the sick children. Their suffering is heart-breaking. This is their first major contact with physical discomfort and worry. The little ones are perhaps more readily pooled together than the adults. There is an assembly-line for the removal of their teeth and tonsils; they are vaccinated by the hundred. No one tells them why the ordeals take place and to obtain a little silence the mask of the anaesthetist is usually the promptest procedure. They are given standardized games and they are spoken to in a uniform sedative language. They also have their problems, and as they are not yet seasoned by the experience of maturity their difficulties swell into catastrophic proportions. Fortunately, however, good shepherds have invented Child Guidance Clinics which have changed dreadful rituals into understandable needs.

The candidate for illness is the latest variety. This patient-to-be is a gentleman who feels well but comes to consultation for prevention. Such a man is usually greeted with pleasure, probably because he is not officially sick and can still offer a vigorous defence. But he does not present a simple task. He is the subject *par excellence* to test the keenness and ability of the clinician. He should be examined more carefully than the authentic patient because he presents himself



before the illness or perhaps at the very moment when it will appear with the early objective signs. It is with him that hygiene, physical and mental, begins. If we are really on the alert we can in many instances suspect one or two prodromal signals and maybe predict the immediate and remote future.

Jules Romains has left us two paradoxical aphorisms that are good themes for medical meditation. The first one is well known: "Every healthy man is a sick man who does not know it", while the second is not so widely known. It is a definition of health. "Health", says Romains, "is a temporary state with a bad future".

Patients, whether acute or chronic, adults or children are submitted to various rituals. They are pricked, punctured, scratched, put to sleep, opened, closed, massaged, measured, weighed, catheterized, catharsized and talked to only very little. All those procedures are performed with very few explanations, if any. The patient's opinion and consent are seldom asked. In general, one speaks too little to them; however, this lack of conversation should not be replaced by endless questionnaires because one might then produce a new disease, possibly a psychoneurosis, thus creating the paradox of a destructive avalanche of therapeutic words.

To sum up, it is extremely difficult to define the ideal behaviour with the patient. One can easily see the pitfalls to be avoided but perhaps one does not always grasp clearly the definite attitude one should take in each particular case. The task should be more simple if one never forgets that the patient is a person, like you and me, and if one puts himself in the place of the patient. The patient and the doctor are human persons with the same reactions and instincts. The best bond to link and unite them is sympathy.

And now, we are not through yet with the fight against prejudices. Which one is the best method to cure our patients? The French or the English? Why not the American one? American medicine is so well organized!

Gentlemen, chauvinism in our midst is a wound that is still infected. We find among doctors, and still more among patients, violent sponsors of Anglo-American, German, French and even of Canadian medicine. Some doctors systematically read none but medical journals that are printed in their own language. One wonders how chauvinism can persist when the fact is untenable. Those who read only one language are forced to come in touch with the reports of medical societies of the whole world as well as with the summaries of the international conventions. Laboratories and clinics of all countries are visited each year by researchers from everywhere. Consequently the stubborn unilingual reader absorbs, whether he

wants it or not, medical papers of universal inspiration. It remains true, however, that certain countries have progressed more quickly than others because they had pecuniary and technical resources in amazing abundance, that other countries developed old traditions of keen observation to a point nearing perfection, and that others are unsurpassed in laboratory work; however, it remains true and equally obvious that the sum-total of all such competencies and traditions originating from different ethnical sources have been canalized through universal information. This verification is so obvious that its further demonstration would be preposterous. I recommend to those who are still in doubt to ask their book-seller for a number of the *World Health Organization Journal*.

Medicine has no boundaries, as it is universal. Would one think of France when drinking pasteurized milk? Would one refer to Lister when entering an operating-room? Are surgeons in the habit of mentioning the name of Cushing when they operate on a patient for a cerebellar tumour? When your mouth waters at the sight of a rare filet mignon do you feel a sudden urge to recall the experiences of Pavlov? Answering those questions would be unnecessary. Medicine that is practised and taught in Canada is the same as that which is taught in all other countries that have accurate means of information.

One can choose a hospital or a physician because of one's own affective reactions, but it is senseless to ask for a regional method of diagnosis or treatment. A country with a medical thought solely of its own would be a country without travelers, journals or radio stations.

The example set by the Quebec Division of the Canadian Medical Association is nothing but the repetition of what goes on in Switzerland, in Belgium, in South Africa, in Central Europe and in all countries where several languages are spoken. In Canada, the two principal ethnical groups have learned to know each other more intimately and their more frequent contacts have already enriched both groups.

Fifty years ago our methods were already almost identical but we had not yet acquired the good habit of our present-day co-operation. We then functioned as two isolated groups. To-day we have learned that we both benefited by mutual understanding; we have become united by bonds of friendship and confidence, and it will not be long before the union becomes total and inter-changeable. We are now under the rule of international disciplines and we cannot regress any more.

With time, the scientific union will become more and more humanized. Our patients already know that we speak the same medical language. They should also feel that we are moved by the same spirit of kindness.

## HOSPITAL REPORTS

### ROYAL VICTORIA HOSPITAL COMBINED STAFF ROUNDS

#### No. 1

#### The Pathogenesis and Management of Acute Renal Failure

- I. Pathological Considerations,  
G. C. McMillan, M.D.
- II. Physiological Considerations,  
Paul Weil, M.D.
- III. Medical Aspects, W. deM. Scriver, M.D.
- IV. Surgical Aspects, J. T. MacLean, M.D.

#### I. PATHOLOGICAL CONSIDERATIONS

Acute renal failure may have a prerenal, an intrarenal or a postrenal origin, or it may combine any of these.

Prerenal factors include massive renal infarction, severe dehydration, marked reduction in blood pressure and marked reduction in the volume of the circulating blood.

Postrenal factors include calculi, tumour or trauma that may obstruct the urinary out-flow by mechanical means.

The intrarenal causes of acute renal failure are due to intrarenal circulatory disturbances, to mechanical plugging of the excretory, collecting or distal convoluted tubules by casts of various materials, to poisoning of the renal parenchyma or to inflammatory processes. It is common for two or more of these factors to be present together. Acute renal failure associated with intrarenal pathology of a characteristic type but occurring in a variety of clinical diseases or circumstances, has been termed lower nephron nephrosis. A partial list of such conditions or diseases might include the following: severe wounds; crushing muscle injuries; abdominal operations; burns; blood transfusion reactions; drug reactions; black-water fever; poisons of many types; utero-placental damage; eclampsia; "shock" from various causes, and so on.

In the majority of cases shock is a common and early finding, and vomiting is a frequent complication.

Pathologically, after a course of about one week, the kidney of lower nephron nephrosis is slightly swollen, somewhat heavier than normal and pale. There is oedema and cloudy swelling. Microscopically the greatest changes occur in the lower nephron, that is, in the ascending or thick loop of Henle and in the distal convoluted tubule. The upper part of the nephron may be similarly damaged, but generally to a lesser degree. The damaged tubules show focal degeneration and necrosis of tubular epithelium and masses of tubular

epithelial cells slough into the lumen. The wall of the tubule may rupture to form a small foreign body type of granuloma in the interstitial tissues. Focal and diffuse oedema is present and casts of protein or cellular nature are numerous. If there has been much crushing trauma of muscle or lysis of red blood cells, hæme pigment casts will be prominent in the lower nephron. There is often a protein flocculate in Bowman's space. Evidence of healing is frequently apparent in the form of regeneration of tubular epithelium. Mitotic configurations of the proliferative type and multinucleate regenerating cells are often numerous.

The mechanisms by which these lesions cause anuria is by no means clear. In some cases cast formation may be so extensive that a serious mechanical interference with the flow of urine exists. While this possibility is recognized in the case of sulfonamide crystal precipitation in the pelvis of the ureter, it is commonly, and I believe, unjustifiably, ignored in the case of the formation of intratubular casts composed of hæme pigments, of cellular debris or of protein material. On the other hand, some cases show no cast formation. In these latter tubular degeneration and necrosis are held to be the causes of anuria by allowing an unselective and excessive resorption of glomerular filtrate from the tubular lumen. Some investigators have postulated that there is an increased circulation of blood about these tubules that may enhance the resorption of glomerular filtrate. It should also be remembered that at the onset of the condition prerenal circulatory alterations or intrarenal circulatory diversions may reduce the rate of glomerular filtration and result in anuria. There is no compelling reason to accept, as yet, any one of these possible mechanisms of anuria to the exclusion of any other. Indeed, various combinations of them are probably active.

One further pathological observation should be made. It was sometimes observed formerly that patients dying in acute renal failure showed large amounts of fluid in the lungs when examined at autopsy. This oedema fluid was present in amounts sufficient to constitute a severe embarrassment to the already ill patient. The oedema fluid in the lungs apparently was due to the use of intravenous fluids in excess of the patient's requirements. It is not seen in those patients who are maintained in correct fluid balance.

#### II. PHYSIOLOGICAL CONSIDERATIONS

Acute renal insufficiency may occur in many conditions met with in all branches of medicine. In acute glomerulo-nephritis, the most prominent symptom, oedema, is due to the diminished urine formation by the reduced blood flow through the ischæmic glomeruli, a decreased excretion of sodium and in some cases perhaps a lowering of



the effective osmotic pressure of the plasma protein because of the albuminuria. Recent investigations indicate that one of the most important changes occurring in acute glomerulonephritis is the retention of sodium and water. It has been shown that there may be a marked increase in plasma volume. It has been suggested that the sudden development of anaemia and hypoproteinaemia in this disease and their reversion to normal with the onset of diuresis is a reflection of the changes in plasma volume. The increased plasma volume and the cardiac damage which sometimes occur in acute glomerulonephritis may lead to the development of pulmonary oedema.

The type of acute renal failure that is of more general interest is that known as lower nephron nephrosis. The causes of this syndrome are discussed under the pathology of Acute Renal Failure. Although it may not be possible to reduce all the various initiating factors to a common cause, it is nevertheless striking that lower nephron nephrosis is not only a result of shock itself but that many of the other conditions causing the syndrome are often accompanied by shock. The mechanism of the production of the renal lesion has been the subject of many investigations. One of the compensatory changes occurring in shock is vasoconstriction, especially in the renal circulation. The vasoconstriction has been shown to have both a neural and a humoral basis.

It has been shown in animals that the kidney has a dual circulation, under the control of the autonomic nervous system. In rabbits whose hind limbs were crushed not only was there arterial spasm at the level of the injury but also in the renal arteries. It was found that stimulation of afferent sciatic or efferent splanchnic nerves or of fibres about the renal artery caused the renal artery to go into spasm. Haemorrhage, toxic doses of various drugs and bacterial toxins had the same effect. It was also shown that there was a diversion of blood flow from the renal artery to the medulla during the procedures used to induce renal artery constriction. It has been suggested that the increased blood flow to the medulla leads to an increased tubular reabsorption of water with consequent oliguria and anuria.

The elaboration and introduction into the circulation of humoral factors by the kidney which may initiate and maintain renal vasoconstriction has been described by several different groups of investigators. It has been shown that early in haemorrhage this mechanism comes into play and that the vasoconstriction may bear no relationship to the degree of fall in blood pressure. The various factors involved in the renal damage that follows incompatible transfusion reaction may be summarized as: lowered blood pressure, vasoconstriction of renal vessels, reduced renal blood flow and the excretion of large amounts of haemoglobin or its derivatives

in an acid urine. In all the conditions mentioned that may lead to lower nephron nephrosis, it is possible that the common pathogenic factor is renal ischaemia and anoxia.

There may be changes in other organs. It has been shown that in shock there is an elaboration of vasodepressor substances by the liver due to the anoxia resulting from the reduced blood supply to the liver. The normal liver inactivates and the normal kidney excretes vasodepressor principle. In severe shock, the impairment of both hepatic inactivation and renal excretion may result in the perpetuation of the hypotension and secondarily of the renal ischaemia. Liver damage has been noted in many of the cases of nephron nephrosis due to trauma, poisons, drugs, shock, etc. In the hepatorenal syndrome characterized by hepatic and renal failure occurring after operation on, or traumatic injury to, the hepatobiliary system, the functional and morphological changes in the kidney are like those of the nephrotic syndrome occurring in other conditions.

The changes in the heart have been studied by several workers. The increase in serum K found in cases of crush injury and after transfusion reaction has suggested that the resulting hyperpotassaemia, by its damaging effect on the heart, may contribute to the fatal outcome in certain cases of nephron nephrosis.

Finally, the pulmonary complications, next to the renal changes themselves, are perhaps the most important of the many aspects of this subject. Cases of complete renal shutdown have been known to survive a month after the onset of anuria. The large number of deaths in acute renal failure that occur in the first week are often related to the pulmonary complications.

### III. MEDICAL ASPECTS

The common concept of the kidney's function is that it is there to form urine, but fundamentally this results only because the kidney is carrying out its basic function of keeping relatively constant the composition of the blood and tissue fluids by conserving or excreting water, electrolytes and nitrogenous and other waste products. So, in a case of oliguria or anuria we should not be too disturbed by the lack of urine but rather by what it implies in terms of total body physiology. However, as it is difficult to be philosophical about such a failure of function, we are more apt to consider it as an acute emergency; but, as in all medical emergencies, we should take time at least to get a clear picture of what is going on.

From the clinical point of view, in such a patient we must first consider whether the cause of the lesion is intra- or extra-renal, as already mentioned. Of the extrarenal factors the most common are those due to insufficient fluid intake or to excessive loss of fluid from



the body, or to both. Diarrhoea and vomiting, for instance, are amongst the most common causes, but conceivably a pronounced oliguria could result from excessive sweating or failure to give fluids to the patient. In such cases the kidney is not actually failing but is merely exercising its function of conserving body fluids.

Shock, while extrarenal in origin, produces an abnormal condition in the flow of blood through the kidney, so producing an intrarenal lesion; lesions of the urinary tract from the pelvis to the urethral meatus may be responsible for the renal failure. So, from the point of view of the internist we are left with two main conditions in which there may be failure of secretion of urine. The first includes all those conditions in which a drop of blood pressure, as in shock, may so lower the pulse pressure as to reduce it below the level necessary for glomerular filtration, and at the same time through the mechanisms already described cause damage to the distal tubules. These conditions, whatever their causative factors may be, can all be grouped broadly under the clinical heading of "lower nephron nephrosis".

The second group includes those conditions in which there is an inflammatory lesion of the glomerulus itself, acute in nature, interfering with glomerular filtration, the clinical entity classified as acute glomerular nephritis. There should be little difficulty in the differential diagnosis between these two, as most symptoms are in contrast, whereas oliguria is common to both. In acute glomerulonephritis there is usually a sense of frequency and urgency, small amounts of smoky or grossly bloody urine are passed, with a high specific gravity, partly due to the blood in it, a large amount of albumin and casts, of which the most important are red blood cell casts. In lower nephron nephrosis the patient merely ceases to pass urine. He has no sense of urgency or he may pass a very small amount. Such urine as is passed may be clear or more often turbid, has a specific gravity fixed around 1.012, contains some albumin but in the microscopic examination though red blood cells are present in moderate numbers, casts are rarely seen, particularly red blood cell casts; on the other hand there is usually a large number of leucocytes or actual pus cells.

In the physical examination pitting oedema, especially of the soft parts and appearing practically synchronously with the oliguria, is a prominent feature in acute glomerulonephritis, whereas in the lower nephron nephrosis type, pitting oedema is rare, although over the course of days the tissues may become full and soggy in appearance. Similarly there is little or no change in the blood pressure or appearance of the fundi in lower nephron nephrosis, whereas the blood pressure is frequently elevated temporarily or fleetingly in the early

stages of acute glomerulo-nephritis, and there may be evidence of constriction of the arterioles and even oedema and hæmorrhages of the retina, though the latter are not so common.

As may well be expected, in both conditions with the failure of excretion the non-protein nitrogen of the blood rises rapidly and continues to rise and there are changes in the electrolyte balance.

The prognosis in each group is usually good though it takes a great deal of faith when one is confronted with the individual case. A surprisingly large number of glomerulonephritis cases recover completely, though some progress to a subacute or chronic state; death in the acute stage is not common. If the patient has not continued into an irreversible reaction of lower nephron nephrosis and we can carry him through the acute stage, then there is ultimately, to quote from our former Professor Oertel, "complete restitution to integrity", with no residual renal damage.

*Treatment.*—Our treatment therefore, in both types of case should be aimed at eliminating, if possible, the primary causative factor and keeping the patient alive, until such time as the kidney function returns, if the damage is not irreversible.

The primary shock or infection should first be treated by appropriate methods in an attempt to remove the causative factor. In the past there have been two schools of treatment of the anuria, the one which forced fluids in the hope of producing diuresis by a "head" of water, the other which withheld fluids with the idea of resting the damaged kidney. In following the middle course we should bear in mind the facts that the body can stand relatively high levels of nitrogen retention with little resulting damage, whereas it is especially susceptible to changes in the fluid and electrolyte balance. The forcing of fluids may produce oedema of the tissues, with "drowning" of the lungs, or, in the case of the brain, it may cause convulsive seizures. On the other hand if we give insufficient fluid the patient will become dehydrated from loss of water in the breath, the sweat, the vomitus, and the stools; in such a condition there is no excess water available to the kidney to excrete when it does recover this function (as it may well do, even after a considerable length of time) and so the oliguria may be unnecessarily prolonged.

As a general rule it is safe to say that the average adult should receive each day fluid 1,000 c.c. in excess of that lost in the urine and vomitus of the preceding day, as we cannot predict in advance how much he is going to put out on a given day. Since he will also have lost sodium chloride in sweat and vomitus this fluid can be given as normal saline. If vomiting be present it should be given intravenously; the addition of glucose 5 or 10% will also give

some calories and tend to prevent ketosis, though glucose *per se* has no specific effect in producing urinary secretion as used to be taught. The sodium chloride balance can be controlled roughly by testing the chloride content of the urine; all you need to do is to add silver nitrate solution to it and see if a precipitate is formed. If chloride secretion is low one must be careful in the amount of saline that is used. If you cannot do this simple test then it is wise to check the plasma levels of chlorides at intervals.

In cases of incompatible transfusion in which the hæm pigments are precipitated in acid media it has been thought wise to give the patient an alkaline substance to excrete, if it can be excreted, one such as sixth molar sodium lactate solution or sodium citrate, but it should be remembered that this gives extra sodium ions and if they are not excreted they can do harm.

As soon as the patient can retain fluids by mouth there is nothing to be gained by intravenous administration and the fluids may be given orally on the same principle. Soups with their high content of nitrogenous material and salt are not advisable but fruit juices and milk can be used. As the condition improves the diet can be increased in scope. With the onset of diuresis there is frequently a continuing increase in the non-protein nitrogen of the blood, as the curve of diuresis goes up so does the non-protein nitrogen. We should not be alarmed by this slow subsidence of the non-protein nitrogen as it takes many days or even weeks for the tubular cells to recover their function. However, the damaged tubule may fail to conserve sodium chloride, so during convalescence these patients may suffer from salt loss, sometimes approaching that seen in adrenal insufficiency and it may be necessary to give a high intake of sodium chloride in the second week or so of the recovery period.

With the therapy outlined the majority of these patients will recover, but if the oliguria persists longer than a week then we should consider the use of the more desperate forms of treatment, such as peritoneal lavage or the artificial kidney.

#### IV. SURGICAL ASPECTS

In hospital practice the factor of dehydration is probably the most important single factor in the production of so-called acute renal failure. Postrenal conditions such as bilateral ureteral calculus, or, "surgical misadventure" are extremely rare. They are usually self-evident and a diagnosis can be made relatively simply. Vesical calculus and prostatism are also readily diagnosed.

That brings one then back to the problem of dealing with the acute intrinsic renal lesion and the many intriguing problems connected with this. The Trueta shunt is interesting inas-

much as the surgical exposure of the kidney rarely produces blanching of the kidney in spite of the fact that such exposure should set up the mechanism of this shunt.

Another factor which may contribute to the production of anuria is the vaso-constriction which takes place in the efferent arteriole progressing in a retrograde manner to the glomerulus, thereby reducing the effective renal blood flow.

A third factor recently described by Barrie of Toronto is that there may still be an alternative arterio-venous shunt in the kidney. He states that the kidney may act as a sponge for blood and that this mechanism of arterio-venous shunt may act as a decompression mechanism when the arterial system is overloaded.

Dr. Hartroft has shown in experimental choline deficiency that swelling and oedema of the cells of the tubules may occur. He has suggested that the oedema causes pressure on the capillaries to the tubules with resulting necrosis. Conceivably, this may be the mechanism of the lower nephron nephrosis type of lesion. It becomes apparent then that in seeking a common denominator it is possible, if not probable, that anoxæmia may be a major factor. This has influenced the treatment considerably and it certainly influences the surgical approach to the problem.

In our experience we have found it advisable to do a cystoscopic examination in all cases of anuria to clarify the diagnosis.

In the lower nephron nephrosis type of lesion one is frequently requested to treat the patient with the artificial kidney during the early stage of anuria. I think that to do so is entirely wrong. If the kidney does not recover spontaneously at approximately the fifth to the ninth day with the treatment outlined the patient becomes extremely toxic and a decision must then be made as to further treatment.

Now, there are various things that may be done. In the past decapsulation has been practised considerably, the principle being that a large congested kidney when it is relieved of its capsule may expand, thus relieving the pressure on the vessels with resultant improvement of renal blood flow. Continuous spinal anæsthetic has also been recommended. We have had little experience with it here, the principle again being to increase the renal blood flow.

Various artificial methods of eliminating the waste products of the body have been used by a variety of workers. Continuous gastric lavage has been practised by some groups. To keep the various tubes operating satisfactorily is difficult. Alternatively, continuous intestinal lavage has been recommended. It is possible to remove urea by this method also but the method is difficult. To keep all the tubes going day after day and to keep the patient in proper electrolyte balance is a problem. Continuous peritoneal irrigation has been practised



a good deal. There is a considerable risk of developing peritonitis.

That brings us then to the use of an "artificial kidney". Some people question whether this has a place in medicine or not. It is true that with the artificial kidney, using the cellophane membrane as a dialyzer it is possible to reduce the waste products in the body to approximately a normal level. Similarly, if one regards potassium as a toxic factor it is possible to reduce the blood potassium to the desired level. By this means it would appear that one can tide the patient over a critical period during which he may again accumulate waste products but may, at the same time, spontaneously start to produce urine, which I think is important.

There are various types of machines which may be used. The one used in the Royal Victoria Hospital is the Kolff model from Holland. It is large and cumbersome but it is remarkably efficient, which is something that is lost with the more portable models. A dialysis can be carried out in approximately six to eight hours, and the blood level of non-protein nitrogen brought down to approximately a normal level. Theoretically, there is some danger because of the arterio-venous shunt. In our experience we have not had any trouble with this; the blood pressure in these patients has remained almost constant throughout the entire treatment. In the early cases treated in Holland one of the problems encountered was that the patient developed a right-sided heart failure due to returning the blood to the right side of the heart too rapidly. We encountered this only once; the patient was bled rapidly into the artificial kidney and the treatment proceeded without any further trouble.

In closing, I would like to suggest that in treating these cases one be conservative in the early stages, and later between the fifth and seventh day decide whether more radical treatment is indicated or not.

## CLINICAL and LABORATORY NOTES

### Eczema in Infancy and Childhood\*

Few paediatricians have given more attention to the problem of eczema in infancy and childhood than has Hill, Associate in Paediatrics, Harvard Medical School and Chief of the Allergy Clinic, Boston Children's Hospital. His presentation of the subject therefore, published serially in consecutive numbers of the *New England Journal of Medicine* deserves thorough perusal, especially by dermatologists and paediatricians,

but also by everyone wishing to be fully informed of the recent views and practice relating to this disease. His critical review confines itself to the literature of the last four years and concerns itself with "pathogenesis, general considerations, antihistaminic drugs, milk-free diets, unsaturated fatty acids, treatment of secondary infection, bacitracin, fungi, scabies, Kaposi's varicelliform eruption and eczema vaccinatum, nummular eczema, seasonal dermatitis due to pollen, blood protein depletion and hospital morbidity of eczematous infants".

The author agrees with Rostenburg's hypothesis that in atopic dermatitis (which comprises at least 75% of the "eczema" of infancy and childhood) there is a dual hypersensitivity—dermal and epidermal, and states that infantile eczema has elements of both atopic and contact dermatitis. Therefore patch tests may sometimes supply useful information as to the etiology, and that the urticarial type of reaction produced by scratch and intracutaneous tests may also be useful, therefore should not be discarded, as allergens giving this type of test produce eczema as well as urticaria. He draws attention to Simons' declaration in 1945 that exposure to human dander was the most common cause of infantile eczema, and his further comment in 1947 that diminution of this contact had produced little influence on the clinical course of eczema, but admits that the work has been important from a theoretic viewpoint.

Under the heading of General Considerations the author reviews the writings of seven men, including one dermatologist, Perelman, who have long been interested in eczema as paediatricians, and whose collective experience has been enormous. Perelman considers that non-dermatologists have been neglectful in the matter of careful local treatment while over-emphasizing the immunologic approach, which he believes in the vast majority of patients is a waste of time, money and effort. Perelman's recommendations concerning the careful use of a limited number of topical medicaments, and the views of the others with reference to the diagnostic and therapeutic use of elimination and "allergenicity denatured" diets, dust-free environments and skin-testing are well presented, as well as are the use of antihistaminic drugs, and unsaturated fatty acids (not as yet adopted as standard treatment).

With regard to the treatment of secondary infection, warning is given against the use of tincture of iodine, and Epstein's view, shared by many others, that penicillin's greatest value lies in its parenteral use, is stated. It is considered that the reports of sensitization from its topical use are too numerous to justify this employment, and this is not superior to the use of the older antiseptics. Bacitracin, on the other hand, compares favourably with penicillin in effectiveness and its sensitization rate is very low. Fungous infections of the skin have been found to play little part in the eczematoid dermatitis of infants and children. For treatment of scabies, the gamma isomer of hexachlorocyclohexane in ointment form, marketed as Kwell, is highly extolled. Seasonal eczema due to pollen, either by contact with the oily fraction or by inhalation of the water-soluble fraction accounts for a proportion of cases of eczema, especially in the Middle West, and Rowe's hyposensitization treatment is discussed. Other inhalant allergens are thought to have received less than their deserved amount of attention.

Blood protein depletion in generalized erythrodermia has been studied by Wolpe, and his treatment with liver extract, vitamin B complex, intravenous plasma and/or blood, and oral administration of a hydrolyzed amino-acid mixture is described.

In summing up Hill states that eczema is still treated much as it has been in the last 20 years, and no spectacular cure is at hand.

Abstracted by D. E. H. CLEVELAND

\* Hill, Lewis Webb, *New England J. Med.*, 242: 287, 327, 1950.



## THE CANADIAN MEDICAL ASSOCIATION

Editorial Offices—3640 University Street, Montreal

(Information regarding contributions and advertising will be found on the second page following the reading material.)

### EDITORIAL

#### A SURVEY OF CANCER IN MIDDLESEX COUNTY, ONTARIO

A REPORT of a Survey of Cancer in Middlesex County, Ontario, has recently appeared in the *Canadian Journal of Public Health*.<sup>\*</sup> This survey was a "pilot" undertaking conducted by the Department of Health for Ontario in collaboration with the Ontario Medical Association, the local medical societies and all hospitals and physicians in the County of Middlesex. The survey data were collected in 1939 but tabulation and analysis of the material was suspended during the war.

This report will serve a dual purpose: it will be useful in providing a base for firmer thinking about the scope of the cancer problem, and it will be valuable in planning further studies of a similar type in the future. The incidence and prevalence of cancer are not subject to fluctuation like infectious diseases. Although relating to data collected ten years ago, therefore, this report is most valuable since no data of the same sort have been produced elsewhere in Canada.

Some of the essential survey findings may be summarized as follows:

- (a) The incidence rate or the number of cases first diagnosed during the reporting year was 261 per 100,000 population.
- (b) The incidence was slightly greater among females than among males (278 versus 244).
- (c) The prevalence rate or the number of cases diagnosed or treated (old and new) during the year was 332 per 100,000 for males and 394 per 100,000 for females.
- (d) The total case rate, including all cases seen, observed or treated during the year, and also deaths during the year, was 460 for males and 607 for females per 100,000 population.
- (e) For every two recorded cancer deaths in Middlesex County in 1939, there were slightly more than three new cases diagnosed.

<sup>\*</sup> SELLERS, A. H., MARR, W. B., KELLY, A. D. CAMERON, G. S. AND SMITH, I. H.: A Survey of Cancer in Middlesex County, Ontario; *Canad. J. Pub. Health*, 42: 2, 1950.

These figures on the incidence and prevalence of cancer do not differ widely from those published by Dorn for certain sections of the white population of the United States, nor are they seriously at variance with figures produced for the United Kingdom. The area and the population included in the survey were small, but the figures are useful as a guide to the further study which should now be pursued. It would be unwise, however, to apply the observed Middlesex rates to Ontario or Canada as a whole, without most careful consideration of the relevant variables.

This pilot survey was a successful undertaking. Any difficulties which were encountered will provide lessons for the future. The response of the physicians and hospital authorities was excellent and to them goes the credit for anything useful in the report.

A.H.S.

### EDITORIAL COMMENT

#### Invitation to Mid-winter Session of American Medical Association

The following letter has been received by our General Secretary:

"Dear Dr. Routley:

The mid-winter clinical session of the American Medical Association will be held in Cleveland, Ohio, December 5 to 8, 1950. On behalf of the Officers and Trustees of the Association, I should like to extend to the members of the Canadian Medical Association, who care to come, a cordial invitation to attend the Cleveland Clinical Session in December. There will be no registration fee for members of your association and we hope that they will attend as our guests.

It is expected that it will be a very interesting clinical session devoted mostly to the general practitioner. There also will be scientific and technical exhibits. I shall supply you with advance information relative to the program from time to time.

Sincerely,

George F. Lull,  
Secretary and General Manager."

This is an invitation conceived in a spirit of the utmost neighbourliness, and it is with great pleasure that we draw the attention of our members to it. We feel sure that those of us who can take advantage of this friendly gesture will do so very readily. Those who are interested will find details of housing, program, etc., in forthcoming issues of the *Journal of the American Medical Association*, in addition to such information as we ourselves may publish.

## MEN and BOOKS

THE EARLY HISTORY OF THE WORD  
"PSYCHOSOMATIC"\*

Edward L. Margetts, M.D.†

Montreal, Que.

*What is mind? No matter. What is matter? Never mind!*  
(Attributed to Thomas Hewitt Key, 1799-1875, Head-  
master of University School, London.)  
(Someone later added *What is soul? It is immaterial!*).

We hear much these days about the "new" word *psychosomatic*, and the "new specialty" of psychosomatic medicine. Most psychiatrists dislike the adjective psychosomatic and decry the loose use of it: as C. B. Farrar said, it is "a term that should be superfluous".<sup>9</sup> We all know that it tends to emphasize the dichotomy or duality of psyche and soma, whereas most of us find it more practical and theoretically more satisfying to consider mind and body as a biological unity, the psyche and the soma being inseparable aspects of the individual organism. In spite of a very excellent article some years ago by Gregory Zilboorg<sup>23 b, c</sup> on the history of psychosomatic medicine, many doctors, even psychiatrists, do not realize the antiquity of the term psychosomatic or of the psychosomatic concept, and persist in regarding the present flood of publications in this branch of medicine as something new.

It is not my intention to discuss the history of the mind-body relationship in this paper. Nor is it my intention to define psychosomatic medicine, which to me has never meant anything new, and has merely implied *good* medicine, which takes into account every facet of the sick person—mind and body as one. The word, which is certainly unsatisfactory, is so deeply entrenched in the literature that it will never be eradicated. However, let us hope that over the years it will be used less frequently or at least used more accurately, and that it will not point out another "sub-specialty" of medicine. A great deal remains to be written on the history of psychosomatic medicine, and this essay is to treat only of a very small part of it, namely the early use of the term *psychosomatic*.

A number of authors<sup>2, 5, 6, 16, 25, 26, 31, 32 a, b, c</sup> have pointed out that in 1838, Christian Friedrich Nasse (1778-1851) and Maximilian Jacobi (1775-1858) founded a new periodical entitled "*Zeitschrift für die Beurtheilung und Heilung der krankhaften Seelenzustände*". G. Reimer in Berlin published the journal, and only one volume, for the year 1838, ever reached print. This book contained 19 essays, written by F. Nasse, M. Jacobi, C. F. Flemming, P. W. Jessen,

and A. Zeller. All the contributors were disciples of the "somatic" school which flourished in Germany during the first half of the 19th century. Each of the first two articles<sup>24a, 15b</sup> in the new publication contained the word *somatisch-psychischen* in the titles, and in the first paper the reverse term, *psychisch-somatisch*, occurred in the text. Nasse<sup>24a</sup> stated: "the business of recognizing, preventing and treating conditions of mental disorder (Irreseyn) rests upon the fundamental investigation of the simultaneously psychic and somatic activity of man. Here it finds its scientific support, from here on it gains light and learns the road" (Overholser's translation<sup>26</sup>). Most of Nasse's writings were not as broad as this statement, which could be cited as a very excellent statement of psychosomatic medicine as we like to think of it today. Usually he took a rigidly organic view of mental illness.

The year 1838 should not go down as the date at which psychosomatic medicine started, because the principle of the organism-as-a-whole, mind and body together, is almost as old as history itself. Nor should 1838 be taken as the year in which the adjective psychosomatic was first used. When and where the term originated is impossible to say, but it would probably be safe enough to state that it came into vogue soon after the commencement of the 19th century, and it is probably of German or English origin. A large number of medical terms having Greek roots came into common use at that time, very likely because it was the era when it became acceptable for medical writers to switch from Latin to their native tongues, particularly to German, French, Italian, and English. *Psyche* and *soma* and *psychic* and *somatic* were used independently long before they were combined. Even more commonly used were soul and body, mind and body, mind and matter, spirit and flesh, soul and flesh, mental and physical, moral and corporeal, moral and physical, functional and organic, psychic and corporeal. The combined terms *psycho-physical* and *psycho-organic* were frequently used prior to the introduction of the term *psychosomatic*. *Psychical medicine* and *mental medicine* were also employed, as were *psychic* and *psychotherapy*.

In the first quarter of the 19th century there were hot discussions going on in England about matter, life, mind and "organization". These arguments were extremely complicated because many of the participants had rigid and pious minds which resulted in a confusion of religion and philosophy with medicine and common sense. John Abernethy (1764-1831) in 1815<sup>1</sup> during his lectures before the Royal College of Surgeons in London spoke of the Greek *soma* (body), *psyche* (vital principle or life) and *nous* (mind or spirit). Thomas Forster (1789-1860), under the pseudonym "Philostratus",<sup>27</sup> wrote a small volume based on the writings and lectures of Abernethy and others concerning life and

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† Registrar and Assistant to the Director, Allan Memorial Institute of Psychiatry, McGill University.



organization, and compounded the terms in his book "*Somatopsychonologia . . . etc.*" This meant the science of body, life and mind. As an early tract on psychosomatics, this book is well worth reviewing. An anonymous reply to Philostratus appeared in 1823.<sup>3</sup>

There were several uses of the term *psychisch-somatisch* prior to 1838, e.g., by Friedrich Groos<sup>11</sup> (1768-1852) and John Baptist Friedreich<sup>10</sup> (1796-1862). Farrar,<sup>9b</sup> in discussing Groos's writings, translated the term into English as *psycho-somatic*. Groos must be credited with a very practical psycho-somatic approach for his day. He utilized what we might call a hierarchical epigenetic layer concept to formulate a happy medium in the no-man's land between psyche and soma which existed at that time. Groos considered that the normal mind constantly tried to realize "good". A weakening or absence of this drive constituted the basis of insanity. This basic factor he called the "psychic negative". To this negative it was necessary that a "somatic positive", in the form of an organic abnormality, be added so that a mental illness would result. In this way he postulated that both psychic and somatic factors played parts as a psycho-somatic basis for insanity. Friedreich's work is a classic, and contains a very full discussion of the Psychic and Somatic schools in Germany. It would be valuable to have this book translated into English. Nasse<sup>24b</sup> as early as 1822 used the combined term "*psycho-somatologie*".

The earliest reference to the term *psychisch-somatisch* which the author has so far been able to find occurs in Heinroth's<sup>13</sup> "*Lehrbuch . . .*" of 1818, part 2, paragraph 313, p. 49 (*vide infra*). Johan Christian August Heinroth (1773-1843) was Professor of Psychiatry at Leipzig, and the leader of the so-called "Spiritualistic" or "Psychic" school of psychiatry in Germany at the time. Heinroth's chief opponent in the battle of mind and matter was Maximilian Jacobi, head of the Siegburg Asylum and the generally acknowledged leader of the "Somatic" or "Organic" school. According to Leupoldt,<sup>21</sup> Jacobi "committed infanticide by killing Heinroth's psychiatry". Heinroth (ref. 13, and frequently quoted by others) was responsible for great advances in psychiatry, although some of his religious explanations of mental mechanisms and insanity were bitterly attacked. He regarded the body and soul as one, madness as a disease of the entire being. Mental health was harmony of thought and desire, disease a loss of this balance. The soul was a free force, excited by stimulation and through provocation, and endowed with the power of choice between good and evil. The body was the external part of the ego, the organ of the soul, and the senses were the intermediary, "the witness that body and soul are one". Madness was a wild destroying activity of the will, an unfree state of the soul, and all unfree states of soul were due

to sin and evil passions, i.e., fall from grace. The only prophylactic against insanity was Christian faith, and the final treatment was a pious life with absolute devotion to God. Because of Heinroth's statement that sin and evil were the roots of insanity, he had to explain why so many of the vicious and criminal population did not fall prey to madness. He did this by postulating that vice and insanity were each the goals of two divergent paths or developments which both had sin for their point of departure. In spite of Heinroth's Bible pounding, he was apparently a very fine clinical psychiatrist, who did not practise too closely that which he preached. Amdur<sup>2</sup> summarized this very concisely: "It seems that his tendency toward moral discourses left him when he deserted the field of theory and approached the patient. He admonished his students to observe, classify and treat". A glance at the passage from Heinroth translated in this paper will indicate the care and thought which he at all times exercised in his therapy. It is easy to see how he aroused opposition, and probably his most outspoken enemies spoke out after the poor man was dead. For instance, after quoting a passage from Heinroth's "*Lehrbuch*", Bucknill and Tuke<sup>5</sup> stated, "It would seem impossible to compress within a single paragraph a larger amount of false and mischievous teaching. It should only be retailed after being duly labelled 'Poison'." Bucknill and Tuke of course were organically inclined, extremists at the somatic end of the psychosomatic see-saw.

The sentence in which Heinroth used the term *psychisch-somatisch* reads as follows: "Gewöhnlich sind die Quellen der Schlaflosigkeit psychisch-somatisch, doch kann auch jede Lebenssphäre für sich allein den vollständigen Grund derselben enthalten".

The complete paragraph containing this sentence is of considerable interest, and it is felt that an English translation of it will prove useful:

"Even the ancients paid much attention to insomnia in mental conditions as is proved to us by the laws which Celsus compiled on this subject. And indeed insomnia helps to perpetuate excitement in mental illness. It is not enough to investigate only into the various sources of insomnia—which however is necessary to eliminate it completely. One also has to see to the effects and end-results of insomnia, in order to see in what way these might not only be disadvantageous but also of therapeutic value; and, having arrived at such conclusions one has to formulate one's future course (of treatment). As a general rule, the origin of insomnia is psycho-somatic, but it is possible that every phase of life can itself provide the complete reason for insomnia. Even when we are well we do not sleep if some object keeps our interest vividly occupied; in the same way does sleep escape us when an irritation of the blood stream, of the nerves, of the skin, or of the abdomen keeps us in a perpetual state of excitement; when irritations of both kinds (mental excitement or physical irritation) coincide the result is the worse. The same is the case in psychopathological states: hence the so-called sleep-inducing media, 'the narcotica', rarely serve their

purpose; and hence, through the lack of thorough investigation of the origins, one can seldom overcome insomnia in mentally-ill individuals. Likewise one cannot eliminate insomnia even when one is seeking the psychic stimuli as well as the somatic ones in an irritated circulatory or nervous system, or gastrointestinal tract, or in the skin, or in the sexual organs, etc. But does one actually know what demands one makes on oneself and on Nature when one tries to remove insomnia? It is true: in the long run insomnia exhausts the patient, taxes his strength, the organs themselves, and worsens his general condition, and drives him to his last resort: but who is to know if this exacerbation and ultimate tension of the pathological condition will not introduce a state of relaxation and bring about once more a return to normality? Experience has often shown us that through insomnia the most violent manic conditions and similar states are brought down from their peaks (intensities) to a state of relaxation and rest and ultimately to sleep itself; it would be more detrimental to attempt to alleviate the patient's tension forcefully to the point of inducing sleep than to have him remain awake. Therefore, in cases where it is not obvious that irritations which can be removed keep away sleep, it is better, at least in the beginning, to disregard the ill-effects but to closely observe its effects. If however one desires to render help, one has to clearly realize the location of the irritation. Sometimes alleviation is brought about by evacuation of the gastro-intestinal tract, at others by blood-letting, or blistering, or a glass of matured wine, which opium and similar drugs rarely do. The diagnostics of the somatic physician teach us how to differentiate."

The clinical judgment, diagnostic acumen and therapeutic skill of the author as evidenced in this passage cannot be doubted. In it may be discerned a true psychosomatic approach, and an understanding of what might be paralleled to our modern concept of "homeostasis".

#### SUMMARY

This paper consists of a discussion of the early use of the term *psychosomatic*, emphasizing Heinroth's use of it in 1818, and commenting upon some of his psychological concepts relative to his ideas of body and soul.

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#### Dr. Alfred Cox

Dr. Alfred Cox, formerly Secretary of the British Medical Association, has written the story of his life in his own straight-forward fashion.\* It is a story that should appeal to doctors everywhere, since almost his whole professional life has been devoted to the idea of having doctors work together for the good of their patients as well as their own. One might say that from his earliest days he seemed predestined to be a secretary and organizer.

He came into medicine the hard way. First he was an unqualified assistant, then graduated after four years of study at the University of Durham serving during these years as dispenser-assistant to a physician for his board, lodging and £1 a month. After graduation came general practice in Gateshead just over the river from Newcastle. He succeeded in forming the first Gateshead Medical Association

\* Among the Doctors. Alfred Cox, formerly Medical Secretary of the British Medical Association, 224 pp. \$3.00. Christopher Johnson, London W.C.1, 1950. The Ryerson Press, Toronto.



and served on the Municipal Council. His fate led him to become active in the British Medical Association and to lead the fight against the sordid conditions of contract and Friendly Societies practice.

In 1908 he became Deputy Medical Secretary of the British Medical Association and almost at once found himself in the thick of the negotiations which preceded the passage of Lloyd George's National Health Insurance Scheme. When in 1911 the government set up a National Health Insurance Commission to administer the scheme, the Medical Secretary of the B.M.A., Smith Whitaker, was invited to be Vice-Chairman and after much heart searching accepted the invitation. Cox thereupon became Acting Secretary and in 1912 was made Medical Secretary, a post he held for twenty years.

Those years were packed with action: the organization in the 1914-18 war of a Central Medical War Committee similar to the recent C.M.A. Medical Procurement and Assignment Board, a visit to Canada in 1924 and again in 1930 when the B.M.A. held its 98th annual meeting in Winnipeg, and a visit in 1925-26 to South Africa to promote the solidarity of the profession there.

Retirement as Secretary at the centenary meeting of the B.M.A. in 1932 did not end his activities as a "great trade union leader". He became part-time Secretary of the British Health Resorts Association until this was killed by the Munich affair; then was Acting Secretary to the National Eye Service until at the age of eighty he voluntarily withdrew to private life.

Dr. Cox has many ties with Canada. He is a life member of the Manitoba Medical Association, received the LL.D. of the University of Manitoba in 1930, knew and corresponded with A. T. Bazin, H. S. Birkett, C. F. Martin, F. N. G. Starr, J. D. Adamson and the late Harvey Smith, President of the B.M.A. in 1930. He has long been and continues to be on close terms with Dr. T. C. Routley, Secretary of the Canadian Medical Association.

A lifetime of service with the British Medical Association enables him to speak with authority on medical organization. His analysis of the present National Health Service in Great Britain and his comparison of Lloyd George and Aneurin Bevan are masterly. He has known the great medical figures of the first half of this century in particular Rutherford Morison, Dawson, Moynihan, Moran and Horder.

The style reflects the North country from which he sprang: direct, sparing of words, keen in judgment, pungent in phrase. The book is a moving human document of importance from the standpoint of history, sociology and medical economics.

ROSS MITCHELL

## MEDICO-LEGAL

### RESPONSIBILITY FOR SPONGES IN TONSILLECTOMIES\*

T. L. Fisher, M.D.

*Secretary-Treasurer, Canadian Medical Protective Association, Ottawa, Ont.*

A decision of great importance to all the members of the profession who do tonsillectomies and adenoidectomies was rendered June 1, 1950, by the Supreme Court of Canada in the Appeal of Chasney vs. Anderson.

It will be recalled (*Canad. M. A. J.*, 59: 577, 1948) that in 1947 the surgeon performed a tonsillectomy on the infant plaintiff at the end of which neither he nor the anaesthetist remembered the number of sponges put in and taken out of the throat. Therefore a search was made, first with the exploring finger and then with forceps. No sponge was found. Nevertheless, shortly after the patient was taken from the operating room and placed in bed there was difficulty with breathing, marked cyanosis, and death occurred almost at once. At autopsy a sponge was recovered from the trachea. At trial in Manitoba judgment was given for the surgeon. On appeal, in the Supreme Court of Manitoba, the judgment was reversed and damages against the doctor assessed at \$3,250.

That judgment was appealed to the Supreme Court of Canada where it was heard and judgment was rendered on June 1, 1950. Because of its importance the judgment is being quoted in full.

"We are all of the opinion that this appeal fails. The appellant is a surgeon and, in the course of an operation for the removal of tonsils and adenoids performed by him on the deceased child, one or more gauze sponges were inserted in the naso-pharynx and one of them being left there at the conclusion of the operation and escaping into the windpipe caused death by suffocation. The appellant, on his own admission, did not know after completing the operation whether all of the sponges had been removed and the anaesthetist in attendance did not know. Since the appellant had not used sponges with tapes attached, which were available, or had a count kept by the nurse in attendance of the number used and removed, it was clear duty to make a thorough search following the operation to determine whether any sponge remained in the cavity. We agree with the Chief Justice of Manitoba and with Adamson, J. A. that the proper inference to be drawn from the evidence is that the appellant failed in the discharge of this duty and that the death of the child was attributable to this failure.

The appeal is dismissed with costs."

It will be apparent that this judgment imposes a new legal responsibility on surgeons doing tonsillectomies. Heretofore sponges with tapes attached were used only occasionally because of the great handicap they impose upon the operating surgeon. Likewise, sponge counts have not been deemed feasible; a large number of sponges are required very often, they are

\* W. E. Chasney vs. J. W. Anderson, *et al.*

used freely to keep the operative field clean, and their need is so quickly urgent in many cases that it seems almost impossible that a count could be kept. However, this judgment makes it clear that the Supreme Court has now decided that the mere presence of a sponge in the trachea proves an inadequate search. When it is remembered that the evidence, likewise, made it clear that the doctor made not only one but two searches and still was considered to have performed an inadequate search, it will be seen how seriously the responsibility of the surgeon has been increased by this judgment.

The surgeon is now called upon to bear a heavy onus in that he must now satisfy a court that he not only exercised every reasonable precaution, but that he did not leave a sponge at the site of operation.

## MEDICAL SOCIETIES

### La société médicale des hôpitaux universitaires de Québec

Société Médicale des Hôpitaux Universitaires de Québec le 17 mars, 1950.

**Considérations sur un cas de retinocytome.**—François Letarte.

L'observation est basée sur une tumeur qui s'est développée au niveau de la rétine. Elle est communiquée surtout aux médecins de famille qui sont les premiers à examiner les enfants. L'importance du diagnostic précoce n'est plus discutée parce que ces tumeurs tuent inexorablement quand leur traitement est retardé.

Un garçon de 3 ans est présenté au médecin pour douleur à l'œil droit après avoir reçu un collyre pendant 5 mois. Le reflet blanchâtre apparaît dans la pupille. Les phénomènes congestifs sont causés par un glaucome secondaire. L'œil malade est aveugle; l'œil gauche reste normal. Un gliome est diagnostiqué; l'œil est énucléé. L'examen histo-pathologique précise le diagnostic de rétinocytome avec dégénérescence du nerf optique. Ces tumeurs sont fréquentes dans les 3 premières années de la vie. Les deux yeux sont atteints dans 10 pour cent des cas. La symptomatologie est expliquée par le développement de la tumeur. Les rayons X complètent le diagnostic par l'étude du trou optique et la recherche des calcium dans l'œil. Le traitement consiste dans l'énucléation rapide et l'irradiation sur deux champs aux doses formulées. Le pronostic est étudié à la lumière des statistiques récentes. Quand le nerf optique est dégénéré, la survie ne dépasse pas 2 ans dans 40% des cas; il faut alors conseiller les examens périodiques pour dépister les complications.

**Un cas de steatorrhee: maladie fibrokystique du pancréas probable.**—E. Déchéne.

Mieux individualisée depuis 1938, la maladie fibrokystique du pancréas fait le sujet de nombreuses communications médicales. Nous en rapportons un cas chez un enfant de deux ans. L'apparition rapide, dans les six premiers mois de la vie, de troubles digestifs vagues, d'une courbe pondérale stationnaire, d'une toux persistante, de selles riches en corps gras, fait croire à une fibrose pancréatique. Le dosage de la trypsine pancréatique constitue la clé du diagnostic. La pathogénie est très controversée. Un régime riche en protéines tel que le lait protéiné, le lait évaporé demi-écrémé, le fromage, la viande et l'addition journalière de pancréatine, de vitamine A, d'auro-

mycine et de prostigmine, ont amélioré le pronostic de cette grave affection. Ayers et ses collaborateurs de Nouvelle-Orléans viennent de préconiser un traitement chirurgical tout à fait récent et audacieux qui consiste en une section du réseau nerveux sympathique du plexus par un blocage splanchnique à la procaine et d'une splanchnicectomie droite complète. Cette nouvelle technique a donné des résultats immédiats assez spectaculaires.

**Insuccès de la thérapeutique dans un cas de méningite à Pfeiffer.**—Antoine Larue.

L'auteur rapporte l'observation d'un enfant d'un an et demi, souffrant de méningite à bacilles de Pfeiffer, qui, malgré un traitement intensif et varié, par les antibiotiques (streptomycine, auromycine et les sulfamidés), est mort de son infection méningée.

**L'emploi du bleu de méthylène pendant le travail.**—R. Marchand.

L'article rapporte les résultats obtenus dans l'essai d'une méthode d'accouchement médical proposée par un médecin roumain, le Dr Al. Badesco, qui suggère l'injection de quelques centimètres cubes de bleu de méthylène pour activer le travail des patientes enceintes, méthode avec laquelle il aurait obtenu des résultats très concluants. L'auteur croit les affirmations du médecin roumain un peu exagérées, car en conclusion pratique, il a abandonné l'emploi de cette méthode, parce qu'elle ne donne pas les résultats attendus, et qu'elle occasionne quelques inconvénients.

17 février 1950.

**Bronchoscopie et suppuration broncho-pulmonaire.**—Magella Caux.

L'auteur signale que la bronchoscopie doit s'ajouter aux autres méthodes de diagnostic et de traitement des suppurations broncho-pulmonaires. Il rappelle que l'arbre respiratoire utilise des moyens propres pour sa défense: l'action des cils vibratiles, l'action du courant d'air expiratoire par la toux, et "l'expression" pulmonaire. Il en conclut que toute obstruction bronchique diminue le pouvoir défensif du poumon. Après avoir énuméré les principales causes d'obstruction bronchique (corps étrangers, sécrétions, tumeurs) il expose que la bronchoscopie peut faire disparaître ces lésions et par le fait même favoriser la guérison. L'auteur rapporte trois observations de malades chez qui l'aspiration bronchique a certainement aidé à la guérison. Le premier cas a trait à un corps étranger métallique endobronchique, le deuxième à une bronchite purulente aiguë entraînant une véritable inondation pulmonaire, et le troisième à un abcès pulmonaire consécutif à une amygdaléctomie. Il conclut en l'indispensabilité de l'endoscopie perorale dans le traitement des suppurations broncho-pulmonaires.

**Pleurésie putride à B. glutinosus, consecutive à un pneumothorax spontané.**—Ed. Morin et André Potvin.

Une jeune femme s'est présentée à l'Hôpital du St-Sacrement avec les signes classiques d'une pleurésie putride. L'anamnèse a révélé qu'elle avait fait un pneumothorax spontané quelque temps auparavant. Les examens bactériologiques ont mis en évidence, outre une flore microbienne banale et assez variée, un microorganisme gram négatif, asporulé, immobile et ne possédant pas de capsule; il s'agissait du B. Glutinosus ou Ristella glutinosa découvert par Rist et Hallé en 1904. Cette bactérie s'est montrée très pathogène pour le lapin. Nous avons obtenu des pleurésies et des péritonites fibrino-purulentes suivies de mort en huit à dix jours. Le sérum des animaux infectés a présenté des anticorps, mais d'une façon très fugace. L'expérimentation dans ce domaine a été rendue particulièrement délicate à cause de la faible vitalité du bacille "in vitro" (trois à cinq jours), et, par suite, à cause de la difficulté d'obtenir des cultures pures. La bactérie toutefois se conserve au froid.



La pénicilline et la streptomycine n'ont donné aucun résultat, tant chez le lapin que chez la malade. Celle-ci a subi une costotomie suivie d'un drainage, et elle pût quitter l'hôpital soixante jours après son admission.

Le 14 avril, 1950.

**Considérations sur l'acide para-amino-salicylique en tuberculose pulmonaire.**—C.-H. Dorval.

Un avant-dernier né, dans l'arsenal thérapeutique mis à l'épreuve contre la tuberculose pulmonaire possède des propriétés physico-chimiques et bactériostatiques très intéressantes dans la lutte contre le bacille de Koch. Son administration per os est d'un maniement facile, maniement facile même comme traitement ambulatoire dans certaines formes aiguës ou chroniques de tuberculose pulmonaire. Avec lui nous avons trouvé une réponse au besoin de diminuer la streptomycino-résistance. Cela nous permet de prolonger cette dernière médication qui garde encore la première place dans les formes aiguës et sub-aiguës. Son action favorable sur les signes généraux et fonctionnels en font une médication de base d'abord, d'association ensuite, et enfin de substitution dans les formes chroniques ou graves de tuberculose pulmonaire.

**Application de divers traitements de la tuberculose pulmonaire.**—R. Desmeules, R. Dion et L. Montminy.

Les auteurs rapportent dix observations de différentes formes de tuberculose pulmonaire traitées par des modalités thérapeutiques déjà un peu anciennes ou encore par des méthodes de traitement qui subissent actuellement l'épreuve de l'expérience clinique. Ils insistent sur l'importance de la cure hygiéno-diététique et affirment que la cure de repos tient encore la première place dans le traitement de la tuberculose. Oublier cette notion c'est s'exposer à de graves désillusions.

Les différents modes de collapsothérapie sont toujours parmi les meilleures armes de la thérapeutique anti-tuberculeuse. Les nouveaux traitements loin d'en diminuer les indications, en facilitent les applications. Les auteurs soulignent les indications de la résection pulmonaire, de la streptomycine, de l'acide para-amino-salicylique et la T.B. 1. Ils insistent sur la nécessité de faire un diagnostic clinique et radiologique complet avant de choisir une modalité thérapeutique et ils sont d'opinion que le laboratoire prend une place de plus en plus grande dans la poursuite du diagnostic et du traitement scientifique de la tuberculose pulmonaire.

**Streptomycino-résistance et corollaires thérapeutiques.**—M. Giroux.

La recherche la streptomycino-résistance chez les malades traités par la streptomycine se révèle intéressante par les indications thérapeutiques qui en découlent. Dans les formes pulmonaires ulcéro-caséuses ou fibreuses, la résistance du bacille de Koch s'installe rapidement, tandis que dans les formes aiguës, les résultats thérapeutiques sont meilleurs, avec moins de danger pour l'avenir. Dans les localisations méningées et pleurales, la streptomycino-résistance prend plus de temps à s'installer, ce qui permet un traitement prolongé de l'antibiotique. Au point de vue épidémiologique, il faut se souvenir que la streptomycino-résistance est irréversible.

## CANADIAN ARMED FORCES

### News of the Medical Services

Four Naval medical officers are having the opportunity of visiting a number of European ports. These are Surgeon Cdr. M. Wellman, R.C.N., and Surgeon Lieut. Cdr. V. P. L. Connolly, R.C.N., in the aircraft carrier "*Magnificent*" and Surgeon Lieut. W. J. D. Cooke, R.C.N., and Surgeon Lieut. W. R. Ghent, R.C.N.(R), in the destroyers *Huron* and *Micmac*, respec-

tively. The ships, which are based in Halifax, N.S., are engaged in a three months' training cruise during which visits will be made to Londonderry, Rosyth, Oslo, Gotenberg, Copenhagen, Amsterdam, Antwerp, Cherbourg, Lisbon, Gibraltar and Bermuda. *H.M.C.S. Magnificent* will visit Rotterdam and Portsmouth instead of Amsterdam and Antwerp.

At the invitation of Lieutenant General Sir Neil Cantlie, K.B.E., C.B., M.C., F.R.C.S., K.H.P., M.B.E., D.G.M.S., of the British Army, Brigadier R. L. Coke, O.B.E., Director General of Medical Services of the Canadian Army spent the month of September in Germany attending field exercises of the Western Union countries. Brigadier Coke is expected to return to Canada early in October.

Major Bernard Louis Persiller Brosseau, M.C., R.C.A.M.C., of Montreal, P.Q., has been promoted to the rank of Lieut.-Col. to command No. 25 Field Ambulance in the new-formed Canadian Army Special Force. Following a wide experience in field medical units during World War II, Lieut.-Col. Brosseau has been employed as Senior Medical Officer, Fort Churchill, Manitoba, and as an expert parachutist, has taken part in a number of difficult rescue operations in sub-arctic territories.

A meeting of the International Sub-Committees of Canada and the United States on the "Adaptation of the International Statistical Classification of Diseases, Injuries and Causes of Death to the Needs of the Armed Services" was held in Washington, D.C., on September 7 and 8, 1950. Lieut.-Col. H. M. Stephen, R.C.A.M.C., Ward Lieutenant S. T. Richards, R.C.N., Squadron Leader J. B. Hardie, R.C.A.F., and Dr. A. H. Sellers, Adviser on Medical Statistics to the R.C.A.F., attended as Canadian Armed Forces representatives.

This meeting was called to finalize the adaptation agreed upon by the Canadian and U.S. Sub-Committees before transmission to the Director General of the World Health Organization with the recommendation that it be considered by the Expert Committee on Health Statistics with a view to subsequent presentation to the World Health Assembly for use by member nations.

S/L J. R. Jackson, of North West Air Command Headquarters, lectured to the Canadian Officers Training Corps at Camp Borden on Para-Rescue work.

## CORRESPONDENCE

### Cytological Diagnosis

To the Editor:

I would appreciate the opportunity to discuss Dr. Magner's paper, which appeared in the August issue of the *Canadian Medical Association Journal*. His main conclusions are: (1) the degree of accuracy of cytological examinations in general is fairly high, (2) could be used for screening test for cancer if it were not for (a) unavailability of sufficiently trained personnel, (b) the high cost, and (c) the relatively low yield of symptomless cases of cancer. The first point is well substantiated by citing numerous reports dealing with the accuracy of the method. But the second point, I feel, has not been treated with the same thoroughness and length; notwithstanding the fact that reluctance to recommend cytological methods for mass screening was based on it.

I have studied this phase of the cytological procedures and believe that a fuller knowledge of recent achievements on case findings and its cost, coupled with the already established fact of high accuracy would rather compel us to recommend its use to full capacity. To take these points one by one: (a) Unavailability of sufficiently trained personnel. The fact that it requires only 4 to 12 months to train a reliable cytologist means that this factor should not be a deterrent as in no other field

can a specialist be trained in such a short time. Many experts believe that even that time can be shortened for pathologically trained personnel. Earn and Penner (*Canad. M. A. J.*, April, 1950) undertook cytological examinations without any specialized training, and after examining 200 slides, felt they were good enough experts to report on the next 545 cases for the evaluation of the method.

(b) and (c). High cost and low yield should be considered together. In this connection I have to restrict my comment to vaginal and cervical cytology as I am not very familiar with reports in other fields. As for cost, Dr. Magner quotes Lombard *et al.*, "\$1.50 to \$5.00 on a single patient, according to the volume". As mass surveys deal with large populations, it is the lower figure which should be calculated. This figure, by the way, closely approximates that of W. E. Brown, of Iowa University, (*J. A. M. A.*, January 28, 1950) who reported before the American Medical Association Annual Meeting last year on 5,000 screenings and stated that "placing a screened\* marked slide on the microscope of the pathologist for interpretation cost from \$1 to \$1.25". The percentage of symptomless cervical cancers amongst the female population has an important bearing on cost per patient detected. Dr. Magner quotes Earn and Penner who figure that it would cost approximately \$150 to find one early case. This sum does not include cancer cases with marked symptoms, because they would seek medical help anyway, but unfortunately they are already too advanced. Inclusion of these cases would lower the cost per case to \$550. However, there is a considerable difference of opinion on the rate of occurrence of symptomless cases. Dr. Brown, referred to above, found one unsuspected case of cancer of the uterus in 200 cases and one undetectable case of cancer of the uterus in 500 cases, which adds up to 7 cases in 1,000 persons; the cost per cancer would then amount to approximately \$200. Nieburgs and Pund (*J. A. M. A.*, January 28, 1950), reporting before the same session of the American Medical Association a study of 10,000 cases screening "a good cross-section of the population of all social strata", estimated that it cost between \$120 and \$150 to detect a single case of preinvasive carcinoma of the cervix. In the Well Woman Clinic of the Royal Victoria Montreal Maternity Hospital, there is a yield of 1% of symptomless cancer which corresponds to Nieburgs' and Pund's figure.

We are thus confronted with the fact that for the amount of \$120 to \$750 we are able to detect cancers in such an early stage that they can be, for practical purposes, relatively easily and completely cured.

Dr. Magner states "that it seems unlikely that the expenditure could be justified economically. Even on humanitarian grounds it would seem likely that the state could choose better ways to use funds available for public health purposes."

The crux of the problem and the task of saving literally thousands of lives lies in the validity or non-validity of the above statement. I propose and would like to prove that the expenditure referred to above is fully justified economically as the community and the nation as a whole stand to lose much more by not doing mass screening and consequently not saving these people and that the state is already spending comparable or even larger sums per person for similarly important public health problems. Nobody can set an arbitrary value on life, but one can get some idea by estimating the cost of universally accepted preventive and curative methods which are already operating. The Department of National Health and Welfare (personal communication, August 21, 1950) stated that it cost \$403 to find an active or doubtful tuberculosis case, and if one figures only the minimal cases, the cost per case would be approximately \$800. The state (or province) is also willing to pay the expenses of hospitalization, which in minimal cases amounts on an average to 248 days. There is also an estimated loss of time of about 2 years,

on an average. All these expenditures seem to be well accepted by the public as well as by the state. Why then is there hesitancy in recommending other comparable preventive methods which detect a lethal disease for a comparable expense, and would thus make it possible to cure patients by a much shorter period of hospitalization and without any further loss of time and productivity? The average age of symptomless cancer is 36 years. Successful treatment at this age will leave many years of productive life, which should bring to the community much more than the cost of detection and treatment may possibly amount to. The need for yearly periodic x-ray examination is as valid as a yearly cytological examination.

In conclusion, may I repeat my firm conviction that an expense of up to \$750 and that a few days' or weeks' hospitalization is certainly not too much of a price to save a life and that the expenses even on a nation-wide basis would be gladly accepted by the public if the facts are clearly and properly presented.

Montreal.

D. KULCSAR

#### To the Editor:

In the August issue of the *Canadian Medical Association Journal*, the exfoliative cytologic method of diagnosis is discussed by Dr. D. Magner, and an editorial on the same subject appears. It is gratifying to see that this important topic has been dealt with in the *Journal*. This discussion will undoubtedly assist in the ultimate evaluation of cytology in medical practice. There are a number of fundamentals, however, which should be given consideration but have not been dealt with in Dr. Magner's article or the editorial comment.

While cytology is not without its faults and problems, it is generally recognized by leading authorities on gynaecological cancer as an outstanding advance in the field of cancer control. Extensive experience is one of the prerequisites to efficient and accurate cytologic practice. The opinions of various other American authorities should be included in arriving at a fair evaluation of cytology and its practicability as a screening test for cancer. Shields Warren, one of the leading American authorities on cytology has made some very pertinent statements which should be re-stated. Cancer of the uterus still claims over twenty-five thousand lives each year, and there has been no change in this unfortunate situation in the past two decades. Warren and Gates state "the possibility of demonstrating the presence of carcinoma of the uterus before it has produced symptoms and when symptoms are present and biopsy and curettage have failed to reveal the cause is a remarkable feature of the vaginal smear method."

M. Schram and S. di Palma of the New York City Cancer Institute, state, "Vaginal and cervical smears for diagnosis of malignancy constitute the only known method by which early diagnosis can be made and should be adopted as routine procedure in hospitals and clinics dealing with gynaecologic disorders."

*Do the number of positive finds justify the procedure?*—Another question discussed is whether the yield of positive finds would justify the expense and the trouble of setting up an institute of cytology to offer a diagnostic service to physicians on a widespread basis. Some of the larger clinics are revising their statistics as their experience grows. Dr. Skapier, in reporting cases from the Memorial Hospital in New York, stated that the recent group of early cancer finds in well patients was twice the number previously reported. They now use both vaginal smear and the direct cervical swab or scraping with the wooden spatula, as recommended by Dr. Papanicolaou.

In Dr. Philpott's Well Woman Clinic at the Royal Victoria Hospital, a routine cervical cell-scraping in a group of 1,400 women yielded 13 unsuspected cancers, all of which were in an early stage and believed curable. In a screening program of well women in industry, a similar incidence of 1% was found in a group of over 400 women tested routinely by the Cytological Laboratories, McGill University. Cuyler,

\* Screened by trained technicians.



of Duke University, recently reported finding 44 intra-epithelial cancers in 10,000 smears using a combined vaginal and cervical smear technique.\*

An important experiment has been conducted by the National Cancer Institute of the U.S. Public Health Service. Dr. Austin V. Deibert, Director of the Cancer Control Division, stated to me personally that in a screening project in Hot Springs, Arkansas, Dr. A. W. Hilberg had found just under 2% cases with early cervix cancer when they were using the vaginal smear and the cervical scraping. Such a high incidence of positive finds would seem to justify a widespread screening program to detect early cancer.

*Is the project too costly?*—The question of cost of a cytologic screening program is discussed. The figures of Earn and Penner of \$1.50 to \$5.00 per test seem to be reasonably accurate as compared with our experience, but it is fallacious to base the cost on total population. Any screening survey of the population will fall short of 100% participation at the beginning. Just as with the routine chest x-ray for tuberculosis, early participation may be less than 10%. The same doubts and fears will influence participation in a screening program for cancer. Screening must be on a voluntary basis. It will probably take ten years of successful screening results to get over 50% participation. This reduced volume brings the project within a practical range of cost. Doctors will not take tests on all women as yet. But if they had an institute to which to mail tests for expert interpretation by a pathologist with cytologic training, they would take them today on many suspects. Hospitals and clinics are still going to help shoulder the load of screening, as they are doing today. The cytological centre would simply be available to the family doctor and to industrial groups, while serving as a training centre and consultative bureau to hospitals, who are setting-up new cytological laboratories.

Neiburgs, following a comprehensive screening survey of ten thousand cases, estimated the cost of finding a cancer to be \$150. Such a low cost renders screening by experienced personnel of great practical value.

*Discussion of "false-negative" smears.*—As experience in a new scientific field increases, so should our efficiency. After nine years' experience in cytology, we are learning how to eliminate many errors. In a recent report by the writer published in the Twelfth Clinical Congress Proceedings, in London, England, a consecutive group of 3,605 Royal Victoria Hospital cases were analyzed cytologically and pathologically. The report stresses the value of cytologic screening to complement pathological diagnostic procedures for early recognition of uterine cancer. The overall accuracy of diagnosis was 95.82%. The striking feature of the Royal Victoria Hospital system of doing a routine cervical cell-scraping rather than a vaginal smear was the extremely small number of false negative diagnoses. The paper states "overcoming the chief limitations of the vaginal smear, experience indicates that a negative 'surface-biopsy' cell-scraping can be relied upon to a greater degree than a single biopsy from the unsuspecting cervix." This is borne out in this series in which 2.1% of the cervix cancers were missed by the cell-scraping, whereas the first biopsy missed 9.1% in the same group. In this publication, Dr. Philpott makes the statement that in his experience "cytology as practised in our clinic gives a diagnosis as good as, if not better than, biopsy in cervix cancer."

Malcolm Donaldson, of the British Empire Cancer Campaign, referred to errors in the smear method in a recent report he made to the Royal College of Obstetricians and Gynaecologists. In discussing the Royal Victoria results, he stated, "Mistakes of course do occur, and the important mistake is where the report shows 'no cancer' in a patient who has cancer. These 'false negatives' occurred three times in the examination of 3,605 hospital patients, among whom were the

139 cases of cancer. 'False positives' do no harm, except that unnecessary investigations are carried out. They are very rare."

Diagnostic results in fundal carcinoma were less striking in that false negative diagnoses were reported in 16.1% of 31 cases of adenocarcinoma of the uterine body. More recent figures show improved results.

*Emphasis placed on uterine cancer.*—Emphasis has been laid in this communication upon uterine cancer, in which the advantages of the cytologic examination are greater than in any other field. It should not be recommended that cytologic tests replace the biopsy, but rather that positive cell diagnosis should be confirmed by histologic diagnosis before treatment is instituted. But the cytologic test offers a greatly superior detection procedure awaiting widespread use as an important instrument in the cancer control program, which could now be placed in the hands of the family doctor.

Even in hospitals where biopsy should offer maximal diagnostic efficiency, Dr. Paul Latour, gynaecological pathologist of the Royal Victoria Hospital, states that of the last twenty cervical cancers diagnosed in that clinic, eight of them would not have been biopsied or found except for the cervical cell-scraping revealing the lesion while in a pre-visual and unsuspecting stage. It seems highly regrettable that with a revolutionary method of finding early cancer of the cervix, it should not be made available by the profession as widely as possible and with the least possible delay. Until a cure for cancer is found, early diagnosis still constitutes our best hope.

*Practicability of cytologic screening.*—As Gates and Warren have pointed out, the number of pathologists with special cytologic training and experience is still small, but they state "A special advantage of the method is that a large part of the diagnostic work may be done by anyone who has been trained in the technique. No broad background in pathology and cytology is required to recognize many types of cells. However, only a pathologist having experience with the method will be able to evaluate some of the cells and be prepared to use the method as a means of study of early or premalignant lesions."

The practicability of a screening service being made available to the public and to physicians on a low-cost and non-profit basis has, in the writer's opinion, been demonstrated by the fact that some five hundred practising physicians, pathologists, detection clinics and hospitals have mailed tests to our laboratory for cytologic diagnosis. During the past four years, over five thousand tests have been mailed in and one hundred and eighty-six cancers diagnosed, many of them proved as early and unsuspected. Less than 5% of tests are unsuitable for interpretation. A typical example is that of a 40-year old woman, Mrs. H.W., a patient of Dr. Trites, of Vancouver. The cervical smear sent to us by mail was stained and interpreted as positive in our laboratory. Following surgery while early biopsies were negative, serial sections were later reported by Dr. Fidler, Director of Pathology of Vancouver General Hospital as showing what he believed to be an intra-epithelial carcinoma.

*How frequently should cytologic screening be repeated?*—The editorial stated the impracticability of screening because the procedure to be effective must be repeated every six months. Such a concept is contrary to our experience. Even a test every five years would accomplish many more cures than result from today's efforts. Since we cannot find all cancers today, failure to search out some cases—as many as possible—is not justified. Without cytology, cancer-conscious gynaecologists used to recommend a re-visit in six months. With a negative cytology report this interval may safely be extended to one—perhaps two—years. A practical interval should be sought. Only doubtful cases (less than 10%) require more frequent testing for improved cancer control.

*Discussion of "smear positive biopsy negative" findings.*—I would like to inquire upon what evidence is

\* *Surgery, Gynaecology and Obstetrics*, August, 1950.

based Dr. Magner's statement that "smear positive biopsy negative" findings in pre-invasive cancer may be questioned or condemned. This combination of diagnostic findings has recently been reported with increasing frequency by leading gynaecological clinics throughout America. One need not look far to secure overwhelming evidence that the "smear positive biopsy negative" is a frequent finding not only in pre-invasive cancer but in early infiltrating epidermoid cancer. In a survey of cytological diagnosis in Canada, one might have expected that Dr. Magner would evaluate the experiences of the Royal Victoria Hospital group who during the past nine years have studied more vaginal smears and cervical cell-scrapings than any other Canadian group. Since the introduction of the cervical smear and cell-scraping into the Royal Victoria Hospital, the entire concept of cervical biopsy in early cancer has been revised. Dr. T. R. Waugh, Professor of Pathology, has no hesitancy in cutting serial sections from "ring-biopsies" of the cervix in cases showing positive cytology. Yet it is well-known to pathologists that such a procedure is extremely arduous and costly. Such a time-consuming procedure would soon have been abandoned in the presence of negative histologic findings. But false positive cell diagnoses of cancer have been rare. Careful cytological screening has selected the few positive cases requiring meticulous histologic study by serial sections from the squamocolumnar zone of origin of cervix cancer.

Inexperienced cytologic interpretation may in some small measure justify Dr. Magner's statement that—belief in the "smear positive biopsy negative" concept—"will undoubtedly lead to large numbers of women being treated for cervical cancers which in fact they do not possess". But Dr. Magner's statement is a rebuke to the gynaecologist as a specially trained physician constantly endeavouring to improve his ability to diagnose and control gynaecological cancer. Gynaecologists insist upon experienced cytologic interpretation. So the errors have been reduced to a minimum. Indeed, Dr. Stewart Henry, after intensive experience with cytology during the past five years, makes the statement: "No single case in which positive (Grade 3) cells have been diagnosed cytologically has been subsequently proved to be false positive". Yet in the British report, from the Royal Victoria Hospital group, 16 cases showed the "smear positive biopsy negative" combination in the presence of early cancer as demonstrated by repeated and adequate biopsy studies. Leading gynaecological clinics using cytology report high frequency of "smear positive biopsy negative" combination in the presence of early cancer.

J. ERNEST AYRE

Montreal.

### Empire Medical Advisory Bureau

To the Editor:

For some time prior to April of this year I had planned a visit to Great Britain and in preparation for that trip I communicated with the British Medical Association. They, in turn, referred me to the Empire Medical Advisory Bureau at B.M.A. House, London, following which I had considerable correspondence with the Bureau's secretary, Dr. H. A. Sandiford.

I am convinced that the medical profession in Canada have too little information in regard to the service which the Bureau offers. If any member of the profession is contemplating a trip abroad, I would urge him to get in touch with Dr. Sandiford because I can positively state that no inquiry or arrangement is too much for them to look after. I cannot over-emphasize that my trip, both that portion devoted to clinical work and that to pleasure, was very adequately arranged for me.

C. S. WILSON,  
Surgeon-in-Chief

Kitchener, Ont.

## SPECIAL CORRESPONDENCE

### The London Letter

(From our own correspondent)

#### ANTIHISTAMINES AND THE COMMON COLD

A report just published by a special committee of the Medical Research Council would appear to disprove, once and for all, the suggestion that the antihistamines are of any value in either the prevention or the cure of the common cold. The report is based upon a carefully controlled clinical trial which was carried out in two parts. One part was carried out at the Common Cold Research Unit at Salisbury, where two groups of volunteers were given two different antihistamine preparations from two days before, until three days after, nasal instillation of common-cold washings. In both groups the incidence and the clinical course of the colds were the same in the control series and in those who received the drugs.

The second part of the trial consisted of the administration of an antihistamine drug to 775 volunteers with common colds in 17 industrial and civil service establishments, universities and elsewhere throughout the country. A similar number of volunteers were treated with control tablets. At the end of one day's treatment 48% of the treated and 42.1% of the control group were either improved or cured, whilst at the end of two days' treatment the proportions of cured and improved were respectively 8.8 and 53% in the treated and 8.5 and 51.3% in the control group. Although the numbers were small, a separate analysis of those volunteers with a previous history of allergic conditions showed that at the end of the first day's treatment 54.6% of the treated and 40.7% of the control group were improved or cured, whilst at the end of two days' treatment the comparable figures were 57.7% and 59.3% respectively.

An interesting subsidiary observation in this investigation was that side-effects attributed to the treatment were reported in 20.9% of the treated and 19.2% of the control group.

#### A PIONEER TUBERCULOSIS INVESTIGATION

Plans for one of the most interesting investigations into tuberculosis ever carried out in this country have just been announced by the Pneumoconiosis Research Unit of the Medical Research Council. An entire community of some 30,000 people in one of the coal-mining valleys of South Wales is to be x-rayed at intervals, the non-mining numbers by mass miniature radiography, the miners by full-size films. The three aims of the scheme are to reduce the number of sputum-positive tuberculous cases; to study the effect of this reduction of infectivity on the tuberculin-sensitivity of children and the attack-rate of tuberculosis in the community; and, if an appreciable reduction of tuberculosis infectivity is achieved, to study the attack-rate of massive fibrosis among miners already affected by simple pneumoconiosis. The results of this survey, which is expected to last five years, will be awaited with great interest, mainly in the hope that it will throw definite light on the problem of the etiology of the severe form of pneumoconiosis. If there does result a definite decrease in the incidence of this form of pneumoconiosis, a great step forward will have been taken in preventive medicine and in ridding the coal-mining community of one of its greatest hazards. In addition, as Professor G. R. Heaf, Director of tuberculosis research to the Welsh Regional Hospital Board, says "if this scheme is successful it is going to teach us more about tuberculosis in the next five years than we have found out in the last forty years".

#### STREPTOMYCIN AND TUBERCULOUS MENINGITIS

The Ministry of Health has now issued an analysis of 369 bacteriologically proved cases of tuberculous meningitis treated with streptomycin and observed from 10 to 22 months. The mortality rate for the entire series was 71.4%, and for early cases 50.7%. Of the survivors, 89% were clinically fit and well. The 104 survivors were followed up for another year, giving a total observation



period ranging from 22 to 33 months. All were still alive, and 88 were clinically fit and well. The state of the remaining 16 was as follows: six were mentally retarded, two had genito-urinary tuberculosis, three had bone or joint tuberculosis, one had optic atrophy, two were paralyzed and incontinent, one was emotionally unstable and deaf; one was emotionally unstable.

The importance of early diagnosis and treatment is well brought out by the following figures: Among early cases there were 48% of survivors at the end of 16 months and 2½ years, but among advanced cases there were only 12% survivors at the end of 13 months and at the end of 2½ years this figure had fallen to 10%. The other important point brought out by this report is that the majority of the survivors are active members of the community, and not merely invalids. To quote from the report, "There appears to be a prevalent belief amongst many medical practitioners that streptomycin treatment does no more than prolong life or produce 'recovery' as a physical and mental wreck. This is not true".

WILLIAM A. R. THOMSON

London, September, 1950.

## ABSTRACTS FROM CURRENT LITERATURE

### Medicine

**Some Observations on the Natural Behaviour of Cancer in Man.** Dunphy, J. E.: *New England J. Med.*, 242: 167, 1950.

Cancer does not grow in a steady and irrevocable manner. There are apparent arrests or regressions in growth, which alternate with periods of progression, and are probably the result of local tissue resistance. Spontaneous cure of cancer has been reported even after metastases have been evident and a total destruction of every cancer cell is not necessarily essential for a five-year cure.

Cancer may lie dormant for long periods. It may fail to progress in one area and grow wildly in another, probably because of local tissue resistance. Such a bizarre behaviour is particularly evident in cancer metastasizing via the blood stream. The explosive spread of certain cancers after long periods of slow progression or even quiescence may be interpreted as a sudden breakdown of the defenses of the host; it is particularly apt to occur after surgery and is usually ascribed to the seeding of cancer cells into the blood vessels and lymphatics. The actual mechanism is probably much more complex.

In planning treatment the surgeon should assay the biologic behaviour of each neoplasm from the known course of the lesion as evidenced by history, physical examination and x-ray study. Whenever there is a local recurrence a year or more after surgery reoperation is indicated because general tissue resistance to metastases may be good. Hormonal treatment and postoperative x-ray therapy should not be used indiscriminately as they may accelerate cancer growth; they should be reserved for use in tumours which are actually showing progression. Removal of lymph glands may destroy a very effective barrier to the spread of malignancy, despite the fact that it is almost routinely accepted as good practice.

NORMAN S. SKINNER

**Cardiac Disease and Rheumatoid Arthritis.** Bradfield, J. Y. and Heitmanek, M. R.: *Arch. Int. Med.*, 86: 1, 1950.

The authors refer to the literature concerned with the association of these two diseases, making mention of the different theories and approaches that have appeared. Several large groups of cases of rheumatoid arthritis included varying percentages of heart disease usually rheumatic in type. Percentage rises when the age of onset was in the first three decades of life

and the type of joint change not unlike that in rheumatic fever. The suggestion is made that rheumatoid arthritis and rheumatic fever might be different manifestations of the same morbid process—probably an allergy. The authors chose 45 cases out of a group of 154 patients with rheumatoid arthritis, discarding those over 50 years of age, those where the diagnosis was at all doubtful and those who had a serious co-existing disease: 16 patients showed deviations from normal in the "heart picture" and 7 had definite evidence of a cardiac lesion.

The symptoms in these cases are less pronounced—congestive failure seldom occurs. Early recognition of such cardiac abnormalities, however, is very important from the point of view of preventing further cardiac deterioration.

P. M. MACDONNELL

**Results of Treatment of Gastric Hyperacidity by Radium, with Special Reference to Duodenal Ulceration.** McGeorge, M.: *Quart. J. Med.*, 19: 111, 1950.

The importance of hyperchlorhydria as a factor in the causation and continuance of duodenal ulceration is widely recognized. The underlying defect appears to be not only the production of a highly acid gastric juice in response to the stimulus of food, but also the secretion of an abnormally large volume of the juice in the intervals between meals, and particularly at night. Nearly all forms of therapy concern themselves with attempts at neutralization of this acidity.

The author employed radium needles (total of 40 and 50 mgm.) which were secured in the lower end of a 30-inch stomach tube, the part containing the radium being in a rubber bag made of Penrose tubing which could be distended with water after the radium was in the stomach. This arrangement prevented the needles from leaving the stomach and also held them at least half an inch from the stomach wall. The stomach was irradiated for periods up to six hours a day for a total dosage of 2,000 to 3,000 mgm. hrs. Thirty-two patients were so treated, the acidity of the resting juice, and the secretion of free acidity following histamine injection being almost always reduced and the reduction in some cases persisting for years. Good therapeutic results occurred in ten patients, significant improvement in six, and in eleven cases there was a relapse with subsequent operation being carried out in six of these. Five patients were excluded because the period of observation had been less than a year. There was no evidence of any adverse side-effects from the irradiation and the patient who did not show satisfactory improvement had chronic structural change due to fibrosis from old chronic ulceration.

Intragastric radiation would appear to have definite promise in the treatment of hyperacidity and animal experimentation and further clinical investigation are considered indicated.

NORMAN S. SKINNER

**Dicoumarol Prophylaxis of Thromboembolic Disease in Congestive Heart Failure.** Harvey, W. P. and and Finch, C. A.: *New England J. Med.*, 242: 208, 1950.

Thromboembolic disease, first considered as largely a postoperative complication, has been shown to be actually more prevalent among medical patients, over half of whom suffer from heart disease, particularly congestive failure. Routine autopsies on patients after middle life have revealed thrombophlebitis in as high a percentage as 52.7 and this undoubtedly accounts for the great majority of pulmonary emboli. Patients with congestive failure are particularly liable to thromboembolic disease because of bed confinement, stasis in dependent oedematous legs and perhaps because of damage to venous endothelium from pressure and anoxia. Emboli in such patients are of graver significance because of the already critical circulatory stasis.

Since it is clinically impossible to recognize a large percentage of patients with thromboembolic disease, and since it is particularly prone to occur in the presence of congestive failure, the authors believe that all such patients should be treated prophylactically with dicoumarol. Over a three year period 80 patients so treated had a mortality rate of about half that of a control group of

100 similar in age, sex and type of disease. This improved mortality in the dicoumarol-treated group was attributed to the prevention of emboli as only two questionable cases of pulmonary emboli occurred among these patients as compared with 13 definite and two questionable pulmonary emboli among the controls.

NORMAN S. SKINNER

**Problems and Practices in a Community Hospital. 1. Treatment of Venous Thrombosis.** Pierce, F. R. and Domenici, T. J.: *New England J. Med.*, **242**: 395, 1950.

A clear distinction must be made between phlebotrombosis and thrombophlebitis, the latter is an acute inflammatory process, easily diagnosed by the presence of heat, swelling and tenderness, and the clot is relatively fixed in the vein rendering the chance of emboli breaking off most unlikely. Phlebotrombosis is a bland, non-inflammatory condition and often very difficult to diagnose, its presence being suggested by slight rise in temperature and pulse rate and minimal swelling by slight rise in temperature and pulse rate and minimal swelling of the ankles and calf tenderness and a great likelihood of emboli being produced.

At the Henry Heywood Memorial Hospital, Gardner, Massachusetts, from June, 1944 to January, 1947 there were 11 deaths from pulmonary embolism among 9,438 admissions. From January, 1947 to June, 1949, following an active approach to the problem, there were five deaths from the same cause among 9,915 admissions. In none of these deaths were anticoagulants used or venous interruptions performed.

Prevention of pulmonary embolism lies in the early diagnosis of venous thrombosis. Anticoagulant therapy and venous interruption are complementary and not competitive methods of treatment, although dicoumarol should never be used unless accurate and frequent prothrombin estimations are carried out. The general trend has been away from venous interruption with increasing use of anticoagulants. The authors advocate starting anticoagulant therapy with heparin 50 to 100 mgm. every four hours by continuous intravenous infusion. At the same time, after a prothrombin test, dicoumarol is started, the usual dosage being 300 mgm. at the start, 200 mgm. on the second and 100 mgm. on the third day of treatment. Heparin can usually be discontinued on the third day and the prothrombin percentage is kept between 45 and 60 with adjusted doses of dicoumarol until the patient is up and about.

Venous interruption is preferable to dicoumarol in elderly patients and should be done prophylactically with extensive abdominal operations, fractured hips, major amputations or cases with severe trauma to the lower extremities.

In the presence of a massive pulmonary infarction immediate vein ligation with combined anticoagulant therapy is considered essential. Because of its slowness of action, dicoumarol by itself is never used as an emergency treatment. If heparin is not available venous ligation is mandatory.

NORMAN S. SKINNER

**Veratrum Viride and Essential Hypertension.** Wilkins, R. W.: *New England J. Med.*, **242**: 535, 1950.

Veratrum viride has been used intermittently for over a century in the treatment of fever, tachycardia and disturbances of the circulation. Recently it has been tried in the treatment of hypertension with results favourable enough to stimulate physiologic studies and efforts to isolate its active principles. The dog appears to be the most suitable animal for assay of the effects of the drug. Two purified alkaloids have been separated which appear to possess all the properties inherent in the crude drug. The hypotensive effects are apparently similar in normal animals, normal human beings and hypertensive patients. Generally vasodilator, these effects may be mediated through the central nervous system. Bradycardia is mediated via the vagus and salivation, nausea and vomiting are the most frequent side-effects. Collapse may occur: 80% of 54 patients showed a significant lowering of blood pressure. There is no evidence of

the development of tolerance or idiosyncrasy to the drug on continued administration.

While the common occurrence of unpleasant side-effects makes the drug as yet unsuitable for general use in treatment its generally good effect on the signs and symptoms of hypertension indicate that it is worthy of further study in an effort to find a purified form which will be relatively free from toxicity.

NORMAN S. SKINNER

**Senile Purpura.** Tattersall, R. N. and Seville R.: *Quart. J. Med.*, **19**: 151, 1950.

Senile purpura is not rare but it has attracted little attention and is rarely mentioned in current medical literature. The lesions are remarkably uniform in appearance and distribution, making clinical recognition easy. They occur on the extensor surface and radial border of the forearm and the back of the hand. Occasionally minimal lesions are present on the face, always in relation to the pressure areas of spectacle frames. The individual lesions are large and irregular, varying from one to four cm., in diameter; are dark purple in colour and have a clear-cut margin, distinguishing them from an ordinary bruise. Some lesions fade in a few days, others remain unchanged for weeks. The skin in the affected areas is inelastic, thin and pigmented and in many cases shows non-pigmented scars, permanent freckles and scanty or absent hair. The authors found 60 cases of senile purpura among 809 patients admitted to a geriatric unit for a wide range of medical and social reasons. All were over 60 years of age. The incidence of the condition rose from 2% in the seventh decade to 25% in the tenth. There was no constant associated condition, no evidence of any hematological condition nor of any deficiency disease and administration of ascorbic acid, nicotinic acid and rutin had no beneficial effect.

Histological examination showed an extreme degree of senile degeneration of exposed skin, with degeneration of collagen fibres in the areas affected by senile purpura. The origin of the lesions is considered to be minor external trauma acting on inadequately supported skin vessels.

NORMAN S. SKINNER

## Surgery

**A Case of So-called Lateral Aberrant Thyroid.** Murley, R. S.: *Brit. J. Surg.*, **37**: 324, 1950.

A case of metastasis from an occult carcinoma of the thyroid emphasizes the necessity for hemithyroidectomy whenever a laterally situated tumour of thyroid tissue is found. Adenocarcinoma of the thyroid may be very slow growing and impossible to demonstrate clinically and lymphatic metastases may appear benign. Calcification is frequent in both the primary and the lateral metastases. The primary carcinoma is always on the same side as the secondaries and should be searched for by removing that lobe of the thyroid gland completely, for it may not be obvious at operation and is frequently situated in the posterior and medial aspect of the lobe. Block dissection of the neck is of doubtful value. At St. Bartholomew's postoperative irradiation is the custom. Papillary adenocarcinoma is very radio-sensitive.

BURNS PLEWES

**Evaluation of Surgical Procedures for Gastric and Duodenal Ulcers.** Miller, G. G.: *Brit. J. Surg.*, **37**: 291, 1950.

Experience with 1,000 gastrectomies for ulcer lead to the conclusion that the mortality is low, the results satisfactory and the postoperative complications minimal as compared with other surgical procedures for gastric and duodenal ulcer. The present situation regarding vagotomy is evaluated: the postoperative recovery seems slower, the complications of gastric retention and intestinal irritability more frequent, and the recurrence rate higher. The author uses vagotomy only for stomal ulcers following resection and following good functioning gastro-enterostomy. When the hydrochloric acid is



over 90 units, a vagotomy is combined with a subtotal resection. The subdiaphragmatic approach is better. Vagotomy is never performed for gastric ulcer since neoplasm cannot be ruled out. BURNS PLEWES

**Valvular Anastomosis of the Heart Cavities.** Rappaport, A. M. and Scott, A. C.: *Ann. Surg.*, **131**: 449, 1950.

Work was done on dogs at the Toronto Department of Physiology to develop a technique of creating an anastomosis between an atrium and its corresponding ventricle. A method of implanting the left auricular appendage behind the coronary vessels into the left ventricle is elaborated. This anastomosis allows the blood to flow only in one direction from the atrium to the ventricle. This relieves the congestion due to mitral stenosis and returns the blood to the left ventricle. Thrombosis due to injury to the endocardium and myocardium obstructions the anastomosis unless there is continuous postoperative intravenous heparin. Details of the technique are described and illustrated. BURNS PLEWES

**The Surgical Treatment of Familial Polyposis of the Colon.** Boehme, E. J.: *Ann. Surg.*, **131**: 519, 1950.

The history of heredofamilial polyposis and its surgical treatment is reviewed. One stage total colectomy with preservation of the rectum and ileocolostomy is recommended. Before and after operation repeated cauterization of the rectal polypi is done. A technique of "suction-cautery" is described and presents advantages of ease, speed, and minimal scarring.

The operation and care of seven patients (6 in one family) are detailed. None have more than 3 stools a day and all return for proctoscopy and fulgurization of any further polypi every six months. Four of the seven patients had cancer at the time of operation. All are well and gaining weight after an average of two years. Only years of observation of such cases will prove whether this treatment suffices to prevent death from cancer. BURNS PLEWES

**The Surgical Treatment of Ulcerative Colitis.** Colcock, B. P.: *New England J. Med.*, **242**: 320, 1950.

While the treatment of ulcerative colitis is primarily medical at least 25% of cases require surgical intervention for acute fulminating forms of the disease or for complications such as hemorrhage, perforation, infectious arthritis, obstruction, malignant degeneration or intractability. The present study covers the period from 1927 to 1949, during which time 263 patients with ulcerative colitis were operated upon (ileostomy in 216, partial colectomy in 59 and complete colectomy in addition to ileostomy in 148).

Patients with acute fulminating ulcerative colitis may die from overwhelming sepsis within a few days. The mortality is high from either medical or surgical treatment, but many patients who do not respond to conservative treatment may be saved by an ileostomy. Delay of even a few days in acceptance of operation may be fatal. If profuse bleeding occurs ileostomy should be considered as a means of preventing fatal hemorrhage. Despite the risk attached, further surgery, such as resection of the most severely involved portion of the colon, may be required. Chronic, intermittent bleeding is more common than profuse hemorrhage but may be persistent enough to indicate surgery. Perforation in ulcerative colitis is usually subacute or chronic, leading to localized abscess or to fistulas between loops of colon. The treatment is ileostomy followed by colectomy. Carcinoma occurs in 5 to 8% of patients with ulcerative colitis but in patients who have had the disease for eight years or more an incidence of malignant disease of from 25 to 30% has been found. It tends to start at a relatively early age, spreads rapidly and has a poor prognosis. It should be searched for periodically in all patients in whom colectomy has not been done and this operation should be the basis of any surgery in long-standing cases. Surgical treatment should be com-

sidered and usually advised in any patient who is no longer able to carry on productive work and who is incapacitated for three months out of the year.

NORMAN S. SKINNER

## Obstetrics and Gynæcology

**Early Extrauterine Pregnancy.** Henderson, N. D. and Bean, J. L. M.: *Am. J. Obst. & Gynec.*, **59**: 1225, 1950.

Three hundred and two cases of early extrauterine pregnancy have been reviewed. Included in the series were two cases of primary ovarian pregnancy and one case of chorionepithelioma of the tube. The relatively high initial diagnostic error of 24% reflects the varied and often obscure clinical picture presented by ectopic pregnancy. A history of amenorrhœa which is usually considered along with pain and bleeding as a cardinal symptom of tubal pregnancy occurred in only half the cases. A combination of a high white blood count, normal sedimentation rate, and a slight degree of fever was highly suggestive of blood in the peritoneal cavity. The most valuable aids in diagnosis were posterior colpotomy and aspiration of the cul-de-sac. Decidual reaction in the endometrium was so infrequently observed that its absence could not be considered significant. All the deaths resulted primarily from hemorrhage and shock. Diagnostic errors, delay in obtaining blood for transfusion and the use of inadequate quantities of blood all played a rôle in these fatalities. R. MITCHELL

**The Syndrome of Lower Nephron Nephrosis Following Hemorrhagic Shock.** Guyer, H. B. and Lauson, H. D.: *Am. J. Obst. & Gynec.*, **60**: 101, 1950.

A case illustrating the syndrome of lower nephrosis, followed for 3½ years, is presented. After severe hemorrhage due to rupture of the uterus at the time of delivery, profound shock occurred. Acute renal failure resulted, as evidenced by oliguria, increasing azotæmia, impaired renal concentrating function and slight hypertension. Urine output began to increase on the second day, and the azotæmia decreased after the ninth day. The effective renal plasma flow (p-aminohippurate clearance), effective glomerular filtration rate (mannitol clearance) and the effective tubular excretory mass, (Tm PAH) were first measured on the sixteenth postshock day, by which time a moderate diuresis had been completed, and the blood non-protein nitrogen had fallen to the upper limit of normal. At this time, the values were approximately 40% of the average normal. Clearance measurements repeated thirty-nine days, twenty weeks, forty-one weeks, and three and a half years after the episode of shock showed maximum recovery of filtration rate and plasma flow by the thirty-ninth day, whereas the Tm PAH became maximal sometime between thirty-nine days and twenty weeks. The maximum values achieved were about 65% of average normal. It is not certain whether this indicates that the shock episode resulted in permanent destruction of some renal tissue, or whether the patient's preshock values were at the lower limits of the normal range. ROSS MITCHELL

**The Nutritional Value of the Endometrium for Implantation and in Habitual Abortion.** Hughes, E. C., Van Ness, A. W. and Lloyd, C. W.: *Am. J. Obst. & Gynec.*, **59**: 1292, 1950.

The present study concerns the metabolism of glucose as shown by histochemical stains of the endometrium of normal women and patients giving the history of sterility and abortion. The endometrium has been studied for glycogen, alkaline phosphatase and vitamin C and other enzymes. Certain preliminary conclusions can be drawn. Failure of the endometrium to produce adequate amounts of carbohydrates appears to be a cause of sterility, and, particularly of habitual abortion. The determination of the secretory activity of the endometrium serves as an important index in determining the cause of sterility and abortion. Lack of preparation of the endometrium is primarily due to failure of the pituitary to produce adequate amounts of LH for corpus

luteum stimulation. Small doses of oestrogen will improve the secretory ability of the endometrium by stimulating the output of LH. Fruitful pregnancy requires treatment before fertilization. Frequent studies of the endometrium and abortuses are of definite value.

ROSS MITCHELL

## Psychiatry

**Evaluation of Modern Psychiatric Therapeutic Measures.** Sands, I. J.: *Dis. Nerv. System*, 11: 233, 1950.

This is a comprehensive review of the various methods of treatment now widely used in psychiatric practice with a quite balanced presentation of their indications and general principles of application. It is a useful summary for a physician wishing a short conspectus of psychiatric therapy. It covers insulin shock treatment, metrazol, electro-convulsive therapy, frontal lobe surgery, and psychotherapy, including psychoanalysis and psychoanalytically and psychobiologically oriented psychotherapy, and group psychotherapy. It discusses therapeutic indications and the pre-eminent position of psychotherapy as the method of choice in the psychoneuroses along with special circumstances in which physical methods are indicated in these conditions. It presents a general discussion of the principles of psychodynamics along psychoanalytic lines with comments concerning the departures from these among psychobiologists and neo-psychoanalysts. The current psychiatric hospital situation is described and the requisites for a competent psychotherapist are outlined. There is also an emphasis placed on the incentive to get well and on the value of help from social service workers and members of a patient's family in order to stimulate motivation toward recovery.

W. DONALD ROSS

**Malingered Psychoses.** Davidson, H. A.: *Bull. Malingering Clin.*, 14: 157, 1950.

There is a widespread mistaken thesis that malingered psychosis is not possible, just as there is a widespread failure to recognize that malingering is often the result of a severe personality disorder. There is a practical problem in deciding legal responsibility in the presence of psychotic symptoms even if the voluntary assumption of such symptoms usually only occurs in a markedly deviated individual. A careful psychiatric diagnostic assessment is necessary. Even malingering can be malingered, and this behaviour may result from an attempt to hide the early symptoms of a psychosis. Malingering should be suspected when psychotic symptoms do not fit with characteristic syndromes. Differentiating points are mentioned concerning malingered delusions, depression, mutism, excitement, negativism, stereotypy, bizarre behaviour, and amnesia. The "Ganser syndrome" is described together with the appropriate legal statement on this. It is emphasized that an integrated appraisal of the complete clinical status of the individual is necessary rather than attention to any single differentiating points.

W. DONALD ROSS

## OBITUARIES

**Dr. Bradford Stanley Bishop**, active as a general medical practitioner for the last 52 years in the Annapolis Valley, died suddenly at Kentville, N.S., on August 3. He was in his 83rd year. The first 20 years of his practice were at Freeport and his area was Long Island and Briar Island with a population of 1,500. He was the only physician on these two Digby County islands. In 1928, he returned to his native Kings County and established practice in Kentville.

In the early years of his practice which he started in 1898, travel was difficult, but by team, boat, and sleigh he responded to calls and at times went days with hardly any sleep. After graduating from Kings County

Academy, he went to Acadia University, where he graduated with his Bachelor of Arts degree in 1894, and four years later received his M.D.C.M. from Toronto University. His widow, two sons and a daughter survive.

**Dr. J. S. Brean**, Mayor of Mulgrave for the last 16 years, suffered fatal injuries in a highway accident near Parrsboro July 11 and died in Truro hospital. Dr. Brean was a graduate of St. Francis Xavier and Dalhousie Universities, was a past president of the St. F. X. Alumni and had held prominent positions in the Nova Scotia and Canadian Medical Associations. He also was a keen enthusiast of sports. Surviving him are his widow, and one son.

**Dr. Robert M. Cairns**, 59-year-old city coroner and well known member of Ottawa's medical profession, was found dead in his car on July 24. Death was attributed to a heart seizure.

**Dr. Penu Chalykoff**, a member of the medical staff at Hamilton General Hospital, died suddenly on July 29. He joined the staff in July, 1949, to take post-graduate work after receiving his degree at Queen's University, Kingston.

Born in Bulgaria, he came to Canada 20 years ago and resided in Hearst, Ont., prior to coming to Hamilton. He is survived by his widow, two sons, and one daughter.

**Dr. Félix Champagne** est décédé le 29 juin à St. Joseph de Beauce, à l'âge de 64 ans. Il avait été maire de Victoriaville de 1939 à 1945. Durant son stage à l'Hôtel de ville, le Dr Champagne a pris une part très active à tous les mouvements sociaux de la ville.

**Dr. J.-Louis-O. Corriveau**. Un citoyen estimé de Québec vient de disparaître en la personne du Dr Corriveau, décédé le 7 août à l'âge de 69 ans. Le regretté disparu était avantageusement connu à St-Magloire et à Armagh, dans le comté de Bellechasse, où il a pratiqué sa profession durant 35 ans. C'est avec regret que ses nombreux amis apprendront la nouvelle de sa mort. Le défunt laisse dans le deuil outre son épouse, deux fils et une fille.

**Dr. William T. Ellis**, aged 76, whose column "The International Sunday School Lesson," appeared in newspapers in the United States and Canada, died August 14, at his summer home near Lyndhurst, Ont. A columnist for 52 years, Dr. Ellis lived at Swarthmore, Pa., until he moved to New York two years ago. In 1906 and 1907 he toured the world, investigating social, religious and political conditions for a syndicate of American newspapers. His articles on the Chinese famine of 1906 resulted in the raising of more than \$1,000,000 for relief.

**Dr. Rita Mary Gillen**, wife of Walter Fernuick, died suddenly at Saskatoon, Sask., August 19, in her 31st year. Mrs. Fernuick was born in Brantford, where she attended St. Mary's school, and the Brantford Collegiate Institute. She graduated from University of Western Ontario, London, in 1945, with the degree of M.D. She interned in the Grey Nuns' Hospital, Regina. For the past four years she practised medicine at Wakaw, Sask., and Beechy, Sask. She is survived by her husband.

**Dr. William Edwin Gimby** died recently in Sault Ste. Marie, Ont. He was born near Owen Sound, September 9, 1859. He attended Collingwood High School and put himself through Toronto School of Medicine, graduating in 1889. For ten years he practised in Chesley. In 1900 he moved to Thornloe, at the head of Lake Temiskaming. He became in this way the first doctor between North Bay and the North Pole. He travelled in that now prosperous land, by horse back, boat and snowshoe and on foot. He once did a successful mastoid in a trapper's shack, using a cold chisel and a heavy bolt. As his



family was then growing up, he was concerned with the poor educational facilities available and moved to Sault Ste. Marie in 1903. He practiced until 1939 when failing eyesight forced his retirement. He is survived by six children and eleven grandchildren.

**Dr. W. J. Gunne** died on August 16, at Kenora, Man., in his 91st year. His death severed a link with pioneer days and ended a lifetime of humanitarian service in Kenora district. Dr. Gunne was born in Florence, Ont., and first came to Rat Portage as a young man in 1884. He was then attending Trinity College in Toronto. On graduation from Trinity College, Dr. Gunne first practised at Carberry, Man., and later moved to Glenboro. C.P.R. doctor for over half a century and beloved for innumerable acts of kindness which far transcended his duties as physician, Dr. Gunne with Mrs. Gunne helped to build up the pioneer community. Surviving are his widow; one son and two daughters.

**Dr. Andrew Gentle Hall**, well known at Ormstown, Que., where he practised medicine for 25 years, and one of the oldest living graduates of McGill University, died in Montreal. He was 91. Born in Franklin Centre, Que., he attended Huntingdon Academy and graduated from the Montreal Normal School. He studied medicine at McGill, graduating in 1887. He also held a diploma from the University of Vermont medical school. Active in politics, he was at one time organizer for the Liberal party in Chateauguay County. He is survived by a daughter.

**Dr. Laura S. M. Hamilton**, aged 80, died on August 8 at Queen Elizabeth Hospital in Toronto. A general practitioner in Toronto and Richmond Hill less than five years, Dr. Hamilton was forced to retire because of ill health. She devoted her time to writing on medical subjects. Prominent in the Women's Institute, she lectured regularly for this organization throughout the province. Dr. Hamilton also served as a city probation investigator. She graduated from the University of Toronto in 1907 with the degree of Bachelor of Medicine.

**Dr. Thomas E. White Harding**, aged 49, died on August 17, at Los Angeles. A native of Brockville, Ont., he was a graduate of McGill University.

**Dr. William Reginald Jaffrey** of Dundas, died on August 17 in Hamilton General Hospital. Dr. Jaffrey was born in Fredericton, N.B., 63 years ago. For the last 26 years, Dr. Jaffrey lived in Hamilton, and for the greater part of that period carried on his medical practice specializing in dermatology. He studied medicine at Queen's University, where he took the degree of M.B., L.M.C.C., and was Fellow in Pathology in 1913. In the same year he became assistant bacteriologist to the provincial Board of Health, and a year later assistant bacteriologist at New York Postgraduate Hospital. In 1915, he came to Hamilton where he was city pathologist until 1919. For many years he was also pathologist at the Ontario Hospital. Besides his widow, Dr. Jaffrey leaves two daughters and one son.

**Dr. L. F. Lavigne**, aged 57, of the Department of Veterans' Affairs, Montreal, died in the Hotel Dieu July 17, after a brief illness. He was born in St. Luce, Que., in 1893. He received his early education from the Jesuit Fathers in Montreal and studied medicine at University of Montreal. Receiving his medical degree at 22 he was the youngest doctor on record at that university. Early in the First World War he went overseas as a major with the first Canadian field ambulance company to land in France. Suffering from an eye injury, he was discharged from the army in 1916 and resumed his practice here until 1928. He served as doctor at the St. Vincent de Paul penitentiary from 1928 to 1933. He was associated with D.V.A. in Ottawa from 1933 to 1934 and then in Montreal from 1934 until his death. His widow survives with three daughters and one son.

**Dr. James Alexander McBroom**, dean of the Brockville medical profession, passed away at his residence July 27. He was in his 80th year. He was educated at the Kingston Collegiate and Queen's University, graduating in 1895. During his 55 years of practice, he was located in Gananoque, Montreal and Brockville. While health permitted he had taken an active interest in community affairs. He is survived by his widow and one daughter.

**Dr. Agret A. Mackay** died suddenly on September 6 in Montreal. He was in his 65th year. After completing his secondary school education at Montreal High School, Dr. Mackay entered McGill University from which he graduated in 1913 in medicine. Following two years' internship at the Royal Victoria Hospital, he went overseas with the 42nd Battalion, Black Watch (R.H.R.) of Canada as its senior medical officer. On his return here, Dr. Mackay entered private practice as a neuro-psychiatrist and became medical director of the M.A.A.A., a post, along with many others, he held at the time of his death. He was consultant in neurology at the Montreal General and Verdun Protestant Hospitals, as well as being medical director of the Montreal Forum in which capacity he was club physician to the Montreal Maroons, and later the Canadiens. Dr. Mackay is survived by his widow and two sons.

**Dr. Alexander J. MacLachlan**, aged 68, registrar of British Columbia College of Physicians and Surgeons, died suddenly at his home in Cloverdale, B.C. on July 31. Dr. MacLachlan, who was born in Blenheim, Ontario, was elected to the council of the College of Physicians and Surgeons for British Columbia in 1927 and in 1934 became registrar, holding that office until his death. Graduating from Queen's University with an M.D.C.M. in 1905, Dr. MacLachlan came to Vancouver in 1907. He served as surgeon aboard the C.P.R. Empress ships and interned in both Vancouver General and St. Paul's Hospitals. Dr. MacLachlan was past president of Pacific Northwest Surgical Association and was the second resident doctor for St. Paul's Hospital. Surviving him are his widow and three daughters.

**Le Dr Paul Ostiguy**, chevalier de la Légion d'Honneur et chevalier de l'Ordre de Léopold II, est décédé, le 7 août, après une courte maladie. Le défunt avait fait ses études au collège Ste-Marie et au collège de Montréal. Il avait obtenu son doctorat en médecine à l'université Laval. Durant la guerre de 1914, il avait fait partie des forces armées. Il avait préparé également des examens pour l'armée durant la dernière guerre, à titre de médecin examinateur. Le Dr Ostiguy fut pendant plusieurs années chef de service d'ophtalmologie à l'hôpital Sainte-Justine. Il laisse deux fils et trois filles.

**Dr. Sprague Murray Palmer** of Alliance, Alta., died in August, 1950. Dr. Palmer graduated from Trinity Medical College in Toronto in 1900 and registered in Alberta in 1923. Dr. Palmer was well known for his kindly medical acts to his patients throughout his district. It is with regret that we must record his passing.

**Dr. Eric B. Patterson**, a veteran of five years' service with the Canadian Army Medical Corps, died suddenly on August 24 in Paris, Ont. He was in his 48th year. Dr. Patterson was born in Paris, Ont., and received his medical degree at the University of Toronto. In 1940 he joined the army and served overseas for four years with the Second Field Ambulance. He returned to his practice in 1945. He leaves his widow and two children.

**Le Dr Gérard Poulin**, de St. Prosper est décédé, le 7 août à l'âge de 27 ans. Il a succombé aux blessures reçues au cours d'un accident survenu mercredi dernier.

Le Dr Poulin avait fait des études remarquablement brillantes au séminaire de Québec de même qu'à l'externat classique de St-Jean-Eudes. Bachelier es arts en 1945, il entreprit ses études médicales, la même année, à l'université Laval. En 1947, il décrochait un baccalauréat en médecine. C'est en juin 1950 qu'il obtenait son doctorat en médecine.

**Dr. George Stuart Purvis** died on July 21 in the Vancouver General Hospital. He was a past president of the B.C. Medical Association. He was born in Lyn, Ont., 60 years ago and had lived in New Westminster for 30 years. Apart from his medical duties he was engaged in many community activities. He received his degree at Queen's University, Kingston, Ont. He served with the Canadian Medical Corps in world war one, in Egypt, where he was stationed for two years, and later in England. He was long associated with the Westminster Regiment, and was the medical officer of the 2nd Battalion during the second war years. He is survived by his widow, one son and two daughters.

**Dr. Edward J. Robinson** of Williamstown, Ont., died suddenly at the Hotel Dieu Hospital, Cornwall, July 7. A native of Williamsburg, he was in his 82nd year. His long practice in Williamstown made him known over a wide area and his sudden death will be most sincerely regretted.

**Dr. Annie Hennigar Sanford**, wife of Frank Sanford, died in Noel, N.S., August 10. She was born in Noel, July, 1873, and received her early education at the village school, later engaging in the teaching profession. Her ambition pointed to higher education and she graduated from Dalhousie Medical School in 1906. She practised in Burlington for a few years and then in Cheverie, where she remained until 1919. She had many experiences in the "horse and buggy days". In 1920 she returned to her native village and for the past 30 years she practised in Maitland and Noel. She was active until a few hours before entering hospital. Her varied interests included scenic painting and recently she was given an Award of Merit by the American Physicians' Art Association. She is survived by her husband.

**Dr. G. L. Smith** died on July 29 at Inkerman, P.E.I. He was 62 years old. Dr. Smith was well known throughout the Province as a medical practitioner and, with the exception of four years which he served in the Medical Corps during the last World War, has practised continuously in this Province for the past 30 years. Born at Kelly's Cross, he was educated at Prince of Wales College and St. Dunstan's. He graduated from the latter institution in 1913 and then went to McGill University where he obtained his medical degree in 1918. After practising medicine a short time in Halifax, he moved to Charlottetown and from that time until his death has been a member of the medical staff of the Charlottetown Hospital. For the past seven years he was also chief medical officer for the Island Division of the Department of Veterans' Affairs. His widow and four daughters survive.

**Dr. N. A. Stewart** of Davidson, Sask., aged 31, was drowned on July 28. Dr. Stewart was born in Elstow where he received his elementary education and graduated from the University of Toronto in 1945. He won the Dow Award for rescuing Adolph Shymko from a gas-filled well in October, 1949. Surviving are his widow and two children.

**Dr. Henry Augustus Wardell** died on August 9 in Hamilton, Ont. He was 83. Dr. Wardell commenced practice here in the early 90's and continued for 53 years. He retired in 1946. A graduate of the University of Toronto in 1893, he was a life member of the Hamilton Academy of Medicine; past president of the Hamilton Thistle Club and for many years a member of the Hamilton Golf and Country Club. His widow survives.

## NEWS ITEMS

### Alberta

Dr. R. H. Horner and Dr. T. R. Clarke of Edmonton obtained their M.R.C.O.G. degrees at the recent examinations held in Edmonton by the Royal College examiners. Dr. Clarke and Dr. Horner are graduates of the University of Alberta and following their postgraduate training in Eastern Canada and the United States have been specializing in gynaecology and obstetrics.

Dr. N. W. Woywitka has taken up practice in Edmonton in Ophthalmology following his Certification and postgraduate training in the Toronto General and Sick Children's hospitals. Dr. Woywitka served in the R.C.A.F. during the last great war, and is a graduate of the University of Alberta.

Dr. Roy L. Anderson has reopened his office in Edmonton following his surgical tour of Norway, England and Scotland during the past summer.

The offices of the College of Physicians and Surgeons have been moved to more spacious quarters in the Alexandra Building. The number being 501. All members of the profession of Alberta (and elsewhere) are asked to call in and maybe pass their opinion of these fine quarters. Our Registrar and his assistants are doing a fine job in carrying on the business of the College.

Dr. Colin S. Dafoe, recently returned from England, has commenced practice in thoracic surgery in Edmonton. Dr. Dafoe obtained his F.R.C.S. degree while overseas with the British Army Medical Corp. He is a graduate of Queens' University and following six years as a surgical specialist in Africa and Yugoslavia took his training in thoracic surgery in Leicester and Stockholm.

Dr. Harold Orr, O.B.E., F.R.C.P.[C.] has been appointed a member of the Expert Advisory Panel on Venereal infection on Treponematoses of the United Nations World Health Organization. W. C. WHITESIDE

### British Columbia

Dr. E. Murray Blair of Vancouver has been appointed Registrar of the British Columbia College of Physicians and Surgeons, the position having been vacated by the death of Dr. A. J. MacLachlan.

Dr. J. F. Sparling of New Westminster has been elected to the Council of the British Columbia College of Physicians and Surgeons, to fill the vacancy created by the death of Dr. G. S. Purvis, the former member.

Bursaries totalling \$20,500.00 for postgraduate training have been awarded to 15 British Columbia health workers. Dr. Malcolm Allan and Dr. S. H. Fishout of the Vancouver T.B. Unit are going to McGill, where Dr. Allan will take special training in thoracic surgery, while Dr. Fishout will specialize in internal medicine. Dr. Bruce Bryson, assistant clinical director of the Provincial Mental Hospital at Essondale, Drs. R. M. Lane of Tranquille, and A. C. McKenzie of Victoria, also receive awards. A long list of nurses of various health centres, health departments, as well as the Western Society for Physical Rehabilitation, have received these awards, which take them to various Eastern centres, McGill and Toronto, as well as Baltimore and Boston.

The general practitioners of British Columbia secured a place on the program of the B.C. Medical Association Meeting, September 25 to 27, for a discussion of various problems affecting the general practitioner. The guest speaker was Dr. Victor Johnston of Lucknow, Ont.



St. Paul's Hospital in Vancouver has added a Chiropractic Clinic to its new Out-patient Department similar to the Clinic which has been so successful in the Vancouver General Hospital. As in the latter, the new Clinic will be entirely financed as to equipment and installation by the British Columbia Association of Chiropractors.

J. H. MACDERMOT

### Manitoba

A total of \$301,713 has been contributed to the Winnipeg General Hospital Maternity Pavilion campaign. The campaign, interrupted by the flood, was to provide furnishings and equipment for the pavilion, which is the most modern in Canada. Of the total donations \$287,727 was in cash and \$13,986 in pledges.

Federal grants totalling \$466,000 have been approved for hospitals in St. Boniface and Beausejour, Man. The grants include \$447,000 for the St. Boniface Hospital and \$19,000 for a new Beausejour General Hospital. The money will be used to provide 435 additional beds at the St. Boniface hospital and to complete the 16-bed hospital at Beausejour, which is under construction.

Whittemouth Hospital was formally opened on September 4. Completely modern in equipment and design, it has beds for 10 patients and bassinets for 6 babies in the nursery.

A Manitoba landmark, the Neepawa Hotel, has been converted into a private home for elderly persons. Renamed Sandall-Brock Mansion, the residence opened June 22 in Neepawa and will provide accommodation for persons of independent means and for retired persons. Designed to supply the needs of retired persons, the residence has private gardens, home-cooked meals and completely modern fixtures. A public inspection of the building was held on June 24. Those attending included Dr. C. R. Donovan, acting deputy minister of health, H. E. Puttee, provincial fire commissioner and Dr. William Watt, medical director of the Neepawa health unit.

ROSS MITCHELL

### New Brunswick

The president of the N.B. Medical Society, Dr. W. W. Fleck, of Dalhousie, welcomed the members of the society, and their guests and friends to the seventeenth annual meeting at Campbellton on August 24, 25, and 26. The number registered was good in spite of the rail strike, which had silenced the busy rail yards of Campbellton. One of the special speakers, Dr. D. D. Rutstein of Harvard University was unable to obtain transportation to Campbellton. His absence was deeply regretted. Visiting speakers included Dr. Wilfred LeBlond of Laval, Dr. Norman H. Gosse of Dalhousie, Dr. Gordon Copping of McGill, and Dr. A. J. Grace, of London, Ontario.

Round table conferences were conducted by Dr. A. F. Vanwart on "Uræmia", by Dr. Geo. White, on "Indications for Cesarean Sections", "Trauma", by Dr. D. A. Thompson, and "Maternal Mortality" by Dr. Ruth McDougall and Dr. Wanamaker. All promoted keen interest and useful discussion. Dr. A. D. Kelly, represented headquarters of the Canadian Medical Association, and as usual his presence was a pleasure to his many friends. He also aided discussion by presentation of old and new trends in C.M.A. policy. The three business sessions were well attended and the announcement of the appointment of Dr. F. L. Whitehead, as permanent full-time secretary of the Society, was unanimously approved. In the few months that Dr. Whitehead has been with us he has demonstrated his ability, affability, and application to medical problems in such a way as to make his welcome back to the Maritimes a very warm homecoming. Dr. Whitehead is the first full-time medical secretary in the Maritimes.

Discussions of problems relating to Blue Cross Hospital coverage—prepaid medical and obstetrical care and surgical care took some time and these questions were included in the Report of the Economics Committee of which Dr. A. F. VanWart was chairman. Dr. D. A. Thompson, of Bathurst, N.B., member of the C.M.A. Executive Committee reported on the work of the National Association. Dr. Thompson has been named an alternate delegate of the C.M.A. to the annual meeting of the World Medical Association. Dr. G. E. Chalmers of Fredericton, reporting for the committee on credentials presented a series of basic principles and discussed the position of the outpost hospital in smaller communities. Noon time luncheons heard Dr. N. H. Gosse, C.M.A. President, stress the need for unity in medical affairs and he hoped that in the planning for the medical care of Canadians we might be spared from errors made elsewhere.

The following day at luncheon, Dr. Wilfred LeBlond, in a wise and witty address pointed out the importance of developing and maintaining a high class type of general practitioner. On the general practitioner depended the improvement in public health measures as well as creative methods applied to the citizens as a whole. He reviewed the methods employed at Quebec to keep a good liaison between the university medical group and their conferences throughout the province of Quebec.

The hospitality of Campbellton has several unique features fostered perhaps by its surrounding beauties of hill and stream. The town is happily bilingual and the greeting offered the visitor is intimate, personal and sincere. The local committee worked hard all day and far into the night and the result of their hard work was a successful meeting.

Recently the town of Bathurst honoured a group of its distinguished citizens, by naming them Freemen of the Town of Bathurst. Two physicians were included, Dr. L. D. Densmore and Senator C. J. Veniot, both of whom have long served their community professionally and in many other capacities as good citizens.

Dr. P. J. Losier of Chatham is doing postgraduate work in cancer diagnosis in New York, on a grant from the N.B. Branch of the Canadian Cancer Society.

Dr. Barbara Robinson has joined the staff of the Fredericton clinic, specializing in paediatrics.

Dr. Norman Skinner of Saint John attended the meeting of the P.E.I. Medical Association as official delegate of the N.B. Society. He was accompanied by Dr. F. Whitehead, the Secretary of the N.B. Medical Society.

Dr. J. A. Melanson has been admitted as a serving brother of the Venerable Order of the Hospital of St. John of Jerusalem.

Dr. J. A. McLaughlin presided at the annual meeting of the Defence Medical Association held in Campbellton, during the meeting of the N.B. Medical Society. Brigadier G. E. R. Smith was the guest speaker. Dr. D. C. Malcolm was elected Hon. President and Dr. R. T. Ingram of Bathurst, President for the following year.

A. S. KIRKLAND

### Ontario

The Canadian Nurses Association has reported a shortage of 8,000 nurses in Canada. Many agencies have been searching for a solution to this problem. The experiment of a shortened period of training carried on at Windsor justifies further exploration and shows the

need for a trial of the experiment in a teaching hospital of about 600 beds.

The Toronto Western Hospital announced that a new short nursing program would be inaugurated in September. With the assistance of the Atkinson Foundation, the provincial and federal governments, a new educational building is to be erected. A class of 80 nurses will be admitted for a training of two years. Their education is to be subsidized by grants from these three sources mentioned. At the end of their two years the students will become registered as nurses and will then serve an internship of another year on salary.

The hospital has been flooded with requests by students for entrance into the course. The course has the great advantage of not reducing the amount of instructional practical experience. The classroom time is redistributed so that the nurse receives the maximum benefit from both her theory and her practical training.

Dr. W. G. Scott of the Ontario Regional Office of the Unemployment Insurance Commission took part in the first national conference on ageing ever to be held in the United States which took place in Washington. Dr. Scott has pioneered a system of intensive counselling for older applicants for employment.

Ottawa Civic Hospital has received a total of \$26,000 federal health grants to help meet the costs of increasing its bed capacity. The addition brings the hospital's bed capacity to 668.

A bequest of nearly half a million dollars to the Hospital for Sick Children was contained in the will of the late Mrs. J. E. Hammell. When Mrs. Hammell accompanied her husband on his northern trips she had often helped to send a child from a northern community to the Hospital and in this way came to know what the institution meant to children in all parts of Canada.

Toronto police, in co-operation with the University of Toronto's department of Pharmacology, have been conducting scientific tests for several months in an effort to determine conclusively the concentrations of alcohol in car drivers which lead to traffic accidents. The survey has been planned by research workers in the department of pharmacology with the aid of the Deputy Attorney-General, the Liquor Control Board, and Dr. Joslyn Rogers, with Chief Constable John Chisholm and Inspector Vernon Page of the traffic division. Part of the study is being financed by a federal public health grant to the department of pharmacology.

District No. 5 held the annual meeting at Oshawa on September 13. Dr. M. A. Ogryzlo of Toronto spoke on "The Clinical Application of Cortisone and ACTH". Mr. Lance Rumble, general manager of General Motors Retail Truck Division was the dinner speaker. Colonel and Mrs. R. S. McLaughlin entertained the members at a garden party at Parkwood.

District No. 2 met at Goderich on September 19 and 20. Dr. Ray Farquarson spoke on "Thyroid Diseases" and on "Anæmia". Dr. Arthur R. Elvidge of Montreal spoke on "The Neurological Examination of a Patient" and on "Head Injuries". Dr. M. C. Harvey, Kitchener, president-elect, O.M.A., was the speaker at the luncheon. Members of the Clinton Radar School put on the entertainment at the dinner.

The Indian Health Service of the Department of National Health and Welfare is opening a new 155 bed hospital at Moose Factory which will be the treatment and public health centre for the Indian and Eskimo population of the Hudson Bay area. The medical staff will consist of a medical superintendent and a specialist in tuberculosis.

LILLIAN A. CHASE

## General

**Life Insurance Medical Research Fund Research Grants.** Applications for 1951 grants in aid of research on cardiovascular problems will be received by the Life Insurance Medical Research Fund up to November 15, 1950. Support is available for physiological, biochemical, and other basic research which bears on cardiovascular problems, as well as for clinical investigation in this field. Preference is given to fundamental research. It is expected that about \$553,000 will be awarded for these grants. Applications for postdoctoral fellowships for training in research in 1951-52 will also be received by this Fund up to November 1, 1950. Preference is given to candidates who wish to work in the broad field of cardiovascular function or disease and to candidates who wish to work in institutions other than those in which they have obtained most of their experience. A doctor's degree (M.D. or Ph.D.), or the equivalent is required. The annual stipend varies, as a rule being between \$3,000 and \$4,000, with larger amounts in special cases. At least 15 postdoctoral fellowships will be available. Further information and application blanks may be secured from the Scientific Director, Life Insurance Medical Research Fund, 2 East 103rd Street, New York 29, New York.

The fifteenth annual assembly of the United States Chapter of the International College of Surgeons will be held in Cleveland, Ohio, October 31 to November 3, with headquarters at the Cleveland Hotel. Reservations may be secured by writing to the Committee on Hotels, International College of Surgeons, 511 Terminal Tower, Cleveland 13, Ohio. Preliminary programs may be obtained from the central office, 1516 Lake Shore Drive, Chicago 10.

The Armour Laboratories announce that ACTH has now been made available for sale to all recognized public hospitals in Canada, for treatment of hospitalized patients only. It is available in 10, 20, and 50 mgm. vials.

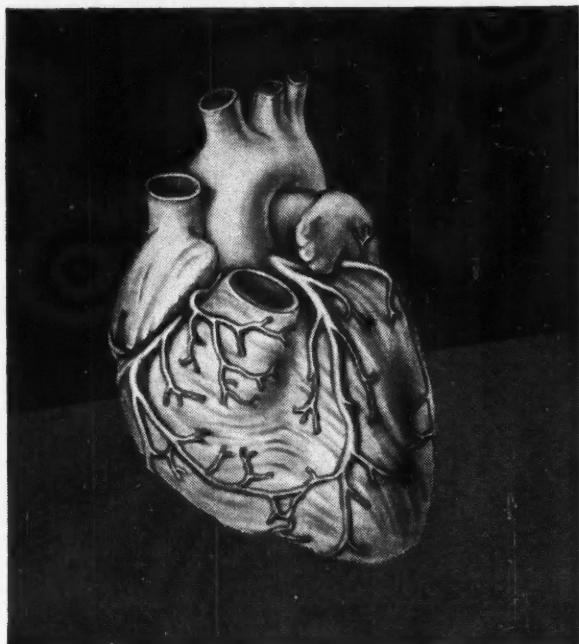
The Thirteenth Annual Louis Gross Memorial Lecture, under the auspices of the Montreal Clinical Society, will be delivered at the Jewish General Hospital, Montreal, on Wednesday, October 25, 1950, at 8.30 p.m., by Dr. G. Lyman Duff, Stratheona Professor of Pathology, Director of Pathological Institute, Dean of Faculty of Medicine, McGill University. The subject will be: "The Pathogenesis of Atherosclerosis".

## Book Reviews

**Pharmacologic Principles of Medical Practice.** J. C. Krantz, Jr., Professor of Pharmacology, School of Medicine, University of Maryland; and C. J. Carr, Associate Professor of Pharmacology, School of Medicine, University of Maryland. -980 pp., illust. \$10.00. The Williams & Wilkins Co., Baltimore, Md.; Burns & MacEachern, Toronto, 1949.

This excellent book opens with eight chapters dealing with the general basis of the science of Pharmacology. An interesting section on the history is included, as is a reasonable discussion of modern prescription writing. The next nine chapters deal with the anti-infective drugs. This section covers the most modern treatment of malaria, syphilis and many bacterial infections. There are excellent chapters in this section on the antibiotic agents, including streptomycin. The remainder of the book, which consists of seven large sections, is arranged according to the physiological systems. For instance, one part consisting of eleven chapters, deals with the effect of drugs on the central nervous system. This, of course, includes general anaesthesia, alcohol, barbiturates, as well as an informative discussion of the problem of drug addiction. This arrangement of the subject material





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Cardiologists have demonstrated that 'Eskel' gives marked relief  
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a mixture of active principles, chiefly khellin, extracted from  
the plant *Ammi visnaga*, equivalent to 40 mg. of crystalline khellin.

**Smith Kline & French Inter-American Corporation, Montreal 9**

1. Killam, K.R., and Fellows, E.J.: *Federation Proc.* 9:291 (March) 1950.
2. Rosenman, R.H., et al.: *J.A.M.A.* 143:160 (May 13) 1950.
3. Osher, H.L., and Katz, K.H.: *Boston M. Quart.* 1:11 (March) 1950.
4. Kenawy, M.R., et al.: *Eye, Ear, Nose & Throat Monthly* 29:79 (Feb.) 1950.

renders this text an easy one to read, but makes its use as a reference book somewhat difficult. Each drug in its own section is discussed from a chemical, physiological and pharmacological viewpoint. In most cases the therapeutic use and dosage schedules are clearly explained. In many instances pertinent commentaries appear. For example, there is an interesting discussion on the rising incidence of barbiturate poisoning. Abundant diagrams and charts appear throughout. The bibliographies are limited and contain recent references. The book closes with several pages of standard, typical prescriptions. It can be well recommended.

**Occupational Therapy Principles and Practice.** Edited by W. R. Dunton, Jr., Founder and former Editor Occupational Therapy and Rehabilitation, and Sydney Licht, Editor Occupational Therapy and Rehabilitation. 332 pp., illust. \$7.25. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, Ont.

This text is a compendium of the work of eleven authors, each one treating the problems with which he has himself to deal. It is well written and approaches the subject of Occupational Therapy from the purely medical point of view. It is a book that will be of more use for reference purposes than for simply reading. From it, any one who wishes to look up a specific problem of the rehabilitation by Occupational Therapy of a case, can find adequate material to guide him in writing a simple description. There is no space devoted to specific occupational technicalities, it being assumed that the readers will find these in other texts. It is a useful book for medical men, but not sufficiently specific for physiotherapy or occupational therapy technicians.

**The British Encyclopædia of Medical Practice.** 2nd ed., under the Editorship of the Rt. Hon. Lord Horder, Extra Physician to H.M. The King, Consulting Physician to St. Bartholomew's Hospital, London. Vol. I, Abdominal Emergencies to Anus Diseases. 786 pp., illust. \$15.00. Butterworth & Co., Ltd., London, 1950.

This encyclopædia is now in its second edition. This edition will be comprised of 12 volumes, and an index volume. The first volume is now available. It follows the same well-produced format. Lord Horder succeeds Sir Humphry Rolleston as editor, and makes it clear that the encyclopædia will do full justice to the changes and developments which have taken place in the practice of medicine since the first edition appeared. Chemotherapy and antibiotics, the endocrines, advances in nutrition, new techniques in anaesthesia and surgery, psychosomatic medicine; all these are given full consideration, keeping the encyclopædia well in front in its coverage of the field of medicine.

**Diseases of the Heart.** C. K. Friedberg, Associate Physician, Mount Sinai Hospital, New York. 1081 pp., illust. \$13.25. W. B. Saunders Co., Philadelphia and London; MacAinsh & Co. Ltd., Toronto, 1949.

This book is essentially a clinical one, with full explanation of the physiological pathology involved. Technique of physical examination, electrocardiography and radiology of the heart have not been placed in separate sections. These fields have now progressed to a science of their own and the author feels that the details concerned are better studied in textbooks devoted to such subjects. The clinical application of physical signs, electrocardiographs and x-rays of the heart are thoroughly discussed, however, as they apply to the various diseases of the heart. The wealth of information compiled in this volume is enormous. This reviewer has read from many of its chapters and used it in reference, and found it most complete and its various measures most acceptable. One is intrigued with the details found under Coronary Occlusion (three chapters), Angina Pectoris (two chapters), Cor Pulmonale (two chapters), etc.

The problem of digitalis therapy in acute myocardial infarction is thoroughly discussed. The author has used it even in the first few days after myocardial infarction, when other measures did not control heart failure. It is interesting to see the newer concepts of therapy in subacute bacterial endocarditis. The author feels that since this disease may now be cured, good time should not be lost in trying to obtain a positive blood culture, before beginning therapy with an antibiotic. It would be too much to attempt to review every phase of this book. Most physicians will want it for reference. Students will want it for its clear explanations of all phases of heart disease. Suffice it to say, it will no doubt become a standard reference work.

**Principles of Chiropody.** J. H. Hanby, Consulting Chiropodist, Guy's Hospital and London Foot Hospital; and H. E. Walker, Superintendent, London Foot Hospital and Principal of the School of Chiropody. 383 pp., illust. \$5.25. Baillière, Tindall & Cox, London; Macmillan Co. of Canada Ltd., Toronto, 1949.

From the standpoint of the practising chiropodist, we gather that this is an excellent handbook. Its chapters on padding and supportive treatment are particularly good. From the standpoint of the medical practitioner, some of its chapters might well be studied carefully. The indications of strain shown by a study of the shoe worn by the patient; the chapters on the weak and flat foot; postural effects of flat and painful feet; the causes of flat feet; structural and functional anomalies; metatarsalgia; hallux rigidus, etc., are all profitable reading. Much of the book, of course, is highly technical in its application, and would be chiefly useful to the man whose practice is limited to the foot. The book lays special emphasis on the conditions that affect children and may lay the foundation for trouble in after life.

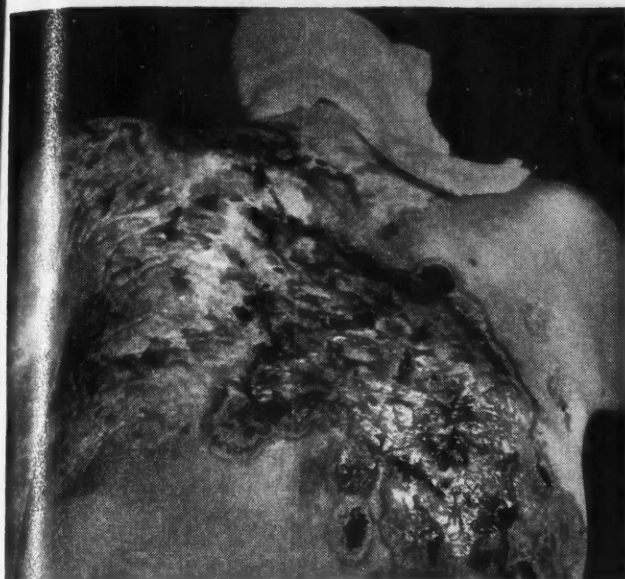
**Clinical Allergy.** L. Tuft, Assistant Professor of Medicine, Temple University School of Medicine and Chief of Clinic of Allergy and Applied Immunology, Temple University Hospital, Philadelphia. 690 pp., illust., 2nd ed. \$13.50. Lea & Febiger, Philadelphia; Macmillan Co. of Canada Ltd., Toronto, 1949.

The second edition of Dr. Tuft's book represents an extensive revision of the first edition, presented ten years ago, and an up-to-date discussion of the clinical aspects of allergy, in relation to the field of internal medicine and the specialties. Its usefulness will be appreciated by those in general practice, requiring a concise informative reference, and there is a short summary at the end of each chapter. There have been several new books on allergy since the war; few have attempted to cover so much ground, and few have succeeded in presenting the subject in such a readable, conservative manner. The importance of moulds, and broadening of knowledge regarding inhalant allergy are recognized in two new chapters. There is a chapter on allergy in children; in any future revision, it would be worth-while developing this branch of the subject in more detail, as it constitutes one of the most difficult manifestations of allergy encountered by general practitioners.

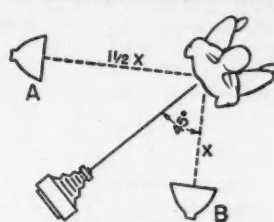
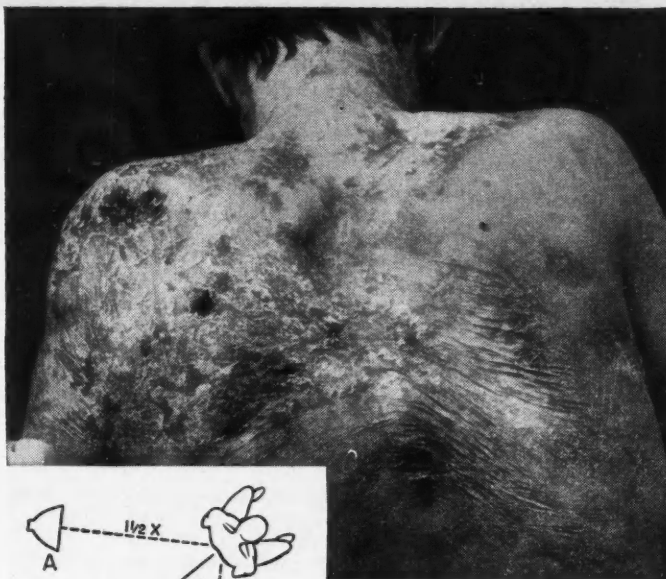
**Diseases of the Aorta.** N. E. Reich, Associate in Medicine, Long Island College of Medicine. 288 pp., illust. \$7.50. Macmillan Co., New York and Toronto, 1949.

In the foreword to this comprehensive monograph on the aorta Dr. William Dock points out that it offers to the profession a valuable fund of precise knowledge about a vital organ which has not been adequately covered in earlier texts. The book covers congenital anomalies, degenerative processes, syphilis and many of the more rare diseases which affect it. The final chapters deal with the use of antibiotics and anticoagulants. The volume is profusely illustrated. The text is not detailed yet it appears to cover the various subjects quite completely. This makes for easy reading. Adequate references are provided.





ABOVE: Blastomycosis, with heavy skin involvement.  
UPPER RIGHT: Control of infection after treatment.



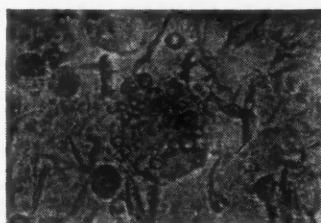
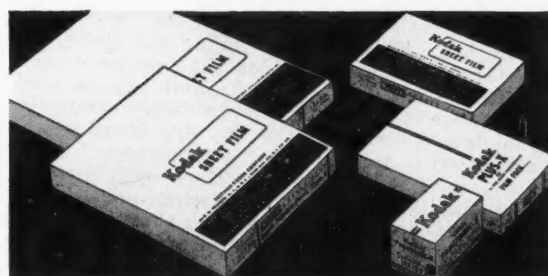
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# Picture the patient

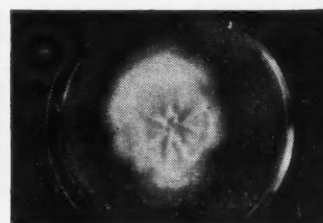
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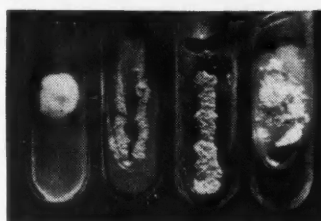
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A



B



C

BLASTOMYCES DERMATITIDIS: A—Budding cells in pus. (Photomicrograph.) B—Giant colony in Sabouraud's agar. C—Growth of test tube cultures on two different media at room and body temperatures.

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**Clinical Biochemistry.** A. Cantarow, Professor of Biochemistry, Jefferson Medical College; and M. Trumper, Commander, H.(S.), U.S.N.R. 642 pp., 4th ed. \$8.75. W. B. Saunders Co., Philadelphia and London; McAinsh & Co. Ltd., Toronto, 1949.

This is an extensively revised edition of a deservedly well-known text. The material is well arranged and is presented with clarity and conservatism. This book can be highly recommended as a guide to the application of clinical biochemical methods.

**The Surgical Treatment of Facial Injuries.** V. H. Kazanjian, Professor Emeritus of Plastic Surgery, Harvard University; and J. M. Converse, Assistant Professor of Clinical Surgery (Plastic Surgery), New York University College of Medicine. 574 pp., illust. \$10.00. The Williams & Wilkins Co., Baltimore; Burns & MacEachern, Toronto, 1949.

These authors have made outstanding contributions to the literature on plastic surgery and maxillofacial injuries for many years, and this wealth of experience is evident in their selection of methods of treatment of various types of injury. The first three chapters consist of a review of the embryology and anatomy of the face and a discussion of the general principles of wound repair and operative technique. The various types of fractures of the facial bones and their treatment are fully discussed. Injuries and deformities of the soft tissues are treated in a similar manner. The final chapters include temporomandibular ankylosis, facial prostheses and anæsthetic management. The book will be of interest not only to the plastic surgeon, but also to the general and oral surgeon who may be required to provide emergency treatment in facial injuries.

**Handbook of Surgical Urology for Interns, Hospital Corpsmen and Nurses.** N. F. Ockerblad, Professor of Clinical Urology, University of Kansas School of Medicine. 189 pp., illust. \$3.00. The Williams & Wilkins Co., Baltimore; Burns and MacEachern, Toronto, 1949.

In the preface it is stated that this small book has been written primarily for the instruction of interns, corpsmen and nurses. Because of its size and the broad field it attempts to cover there is little detail. As a result the book will be of more value to nurses and non-professional urological assistants than to interns. The most important sections deal with the care of urological instruments, the preparation of patients for urological operations and postoperative care. Other chapters, as for instance those on the pathology of urinary tract diseases and surgical procedures are necessarily abbreviated and superficial, and as a result the volume probably will not prove of great value to the intern groups of readers.

**The Cytologic Diagnosis of Cancer.** By the Staff of the Vincent Memorial Laboratory of the Vincent Memorial Hospital. 229 pp., illust. \$7.50. W. B. Saunders Co., Philadelphia; McAinsh & Co. Ltd., Toronto, 1950.

This book is intended as a guide to the microscopical identification of the cells, malignant and non-malignant, which may be encountered in stained smears of body fluids. It is based on experience gained in the study of 7,700 cases by vaginal smears, 450 by smears of sputum or bronchial secretions, 400 by smears of urine sediment, 400 by smears of gastric secretions and 250 cases by examination of smears of serous fluids. There is a histological description of the tissue of the region under consideration followed by a detailed, systematic account of the desquamated cells usually found in that region, together with variations from their typical form. Following this is an equally detailed and abundantly-illustrated consideration of malignant cells of various types which may be found in smears from the region under discussion. General criteria for identification are given and difficulties in interpretation are discussed. A

final chapter is concerned with the technique of collection of material, preparation of smears, staining by Papanicolaou's method and microscopic examination. These workers do not use the technique of sectioning paraffin-embedded sediment from centrifuged fluid samples. Although the authors appear to be aware of the errors inherent in the cytological diagnosis of malignant disease, they perhaps do not sufficiently emphasize this aspect of the subject. Their hope that the book will be regarded only as an introduction to the study of exfoliated cells in the diagnosis of malignancy, is shared by this reviewer. The book should be valuable, nevertheless, to anyone concerned in the actual examination of body fluids for the presence of cancer cells.

**Treatment in Psychiatry.** O. Diethelm, Professor of Psychiatry, Cornell University Medical College, Psychiatrist-in-Chief, The New York Hospital (Payne Whitney Psychiatric Clinic). 546 pp., 2nd ed. \$10.25. Charles C. Thomas, Springfield, Mass.; The Ryerson Press, Toronto, 1950.

This second edition, like the first, is a monograph on psychiatric treatment by a master in that field. The author's evaluation of these new treatments is a well balanced review and criticism.

In the fifteen years that have elapsed since the first edition refinements in general treatment, changes of emphasis in psychotherapy and entirely new techniques have been developed. Most of these are included in this second edition. The author's experience and ability have resulted in a text in which the content is excellent but as is often the case in such a situation the book is sometimes heavy reading and lacking in the type of organization so dear to the hearts of undergraduate students. In some fields the writing is somewhat brief and tends to reflect the specific interests of the author which is natural. For example, less than one page devoted to the technique of deep insulin coma treatment is hardly adequate when several pages are given to the less useful prolonged sleep treatment. One is sorry to note that the author has overlooked the nitrous oxide inhalation technique for psychotherapeutic interviews developed by Lehmann and Bos. This book can be highly recommended to serious students of psychiatry and as a continual source of reference to those practising this specialty.

**Medical Physics, Vol. II.** Editor-in-chief, O. Glasser, Diplomate in Radiological Physics, American Board of Radiology; Professor of Biophysics, Frank E. Bunts Educational Institute; Head, Department of Biophysics, Cleveland Clinic Foundation. Editorial Assistant, J. C. Tucker, Cleveland, Ohio. 1227 pp., illust. \$25.00. The Year Book Publishers, Inc., Chicago, Illinois.

Since the original publication of this encyclopædia of medical physics six years ago developments have proceeded at a staggering pace. In consequence, it became evident to the editorial board that the task of revision for a new edition required addition to the material rather than change in the basic text already published. This led to a unique and thoroughly satisfactory procedure of which the present volume is the first illustration. While the first volume still serves as a basic reference, the new volume essentially carries the developments of the last six years so that it is somewhat in the nature of a supplement. At the same time, it is more than this since each article is complete in itself in order to obviate constant reference to the earlier volume except in those fields where the advances have not been rapid enough to replace the original volume.

The title may mislead some workers who would consider their problems as remote from physics or physical principles. It is worth emphasizing here that the term Physics is used in its broadest sense, so that no field of Medicine in which we have material knowledge is excluded. The range of subjects covered extends from nuclear physics on the one hand to the



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**Sexual Deviations.** L. S. London and F. S. Caprio, Washington Institute of Medicine. 702 pp. \$10.00. The Linacre Press Inc., Washington 6, D.C., 1950.

In the last few decades great progress has been made in understanding the causes and manifestations of sexual deviations. Books on the subject have been largely descriptive, adding little to the pioneer contributions of Krafft-Ebing, Havelock Ellis and others. The present book emphasizes historical, therapeutic, prophylactic, social and legal considerations, as well as psychodynamics. The concepts exposed are exemplified throughout the text by detailed case histories of patients treated by the authors in psycho-analytic sessions. It emerges from this study that sexual deviations are more widespread than is generally conceded, even by the medical profession or social scientists. At the same time, the great variation in normal sexual behaviour is apparent. The authors point out the necessity for differentiating that which is normal and that which is abnormal, on the basis of the nature and motivation of the act and the attitudes of the individual involved. They suggest that deviations from the normal can be called perversions only when they absolutely dominate the picture. It is their conviction that sexual deviations represent symptoms of underlying neuroses of an obsessional type; that all abnormalities of the sexual instinct can be traced to some deep-seated neurosis in childhood; that no one is born sexually deviated, and that sexual deviants are amenable to treatment "provided they can be made aware of the latent factors behind their desire".

From the reviewer's own experience the views held by the authors of this book are rather optimistic. The book does, however, make interesting reading and opens new channels for further study of sexual deviations.

#### Canadian Dietary Standards.

The latest number of the *Canadian Bulletin on Nutrition* is taken up with the text of the Canadian Dietary Standard as approved by the Canadian Council on Nutrition. This standard develops the relationship of calories and some nutrients to body size, a fact in metabolism which is well established but has not previously been applied. Copies of this Standard Bulletin are obtainable from the King's Printer, Ottawa, for \$1.00.

**Clinical Nutrition.** Edited by N. Jolliffe, F. F. Tisdall and P. R. Cannon. 925 pp., illust. \$12.00. Paul B. Hoeber Inc., Medical Book Department of Harper and Brothers, 1950.

This book was written by thirty-six contributors, who are recognized authorities in their respective fields, and edited for the Food and Nutrition Board of the United States National Research Council by Jolliffe, Tisdall and Cannon. The text is thus sponsored by the Food and Nutrition Board. It represents a heroic attempt to present to physicians and medical students those aspects of nutrition which are clinically significant or may become so in the near future. To all but specialists in nutrition, its size may well seem formidable and its designation in the Foreword as a "handbook" hardly seems appropriate. Some of its contents will probably be of interest only to workers in special fields. But this is perhaps unavoidable. Much of clinical nutrition is a new field and it is still too early to write of it dogmatically and with brevity. Whatever the shortcomings of the book, the reviewer doubts if others could have done better or as well.

The book consists of three parts and an appendix. The first part deals with the diagnosis of nutritional deficiency, with emphasis upon recognition in the early stages. The second part takes up the individual nutrient elements. The third part is concerned with therapy and prevention of nutritional deficiency. The appendix pro-

vides tables of food values, dietary patterns, recommended dietary allowances and height-weight tables. Canadian readers will take pride in the fact that the late Dr. Tisdall was selected by the Food and Nutrition Board of the United States National Research Council as one of the editors of this volume. Dr. Tisdall was, in fact, a member of that Board and the appearance of his name on this book is one of the many evidences of his international reputation as an authority on nutrition.

**Medical Protozoology.** C. A. Hoare, Protozoologist to the Wellcome Laboratories of Tropical Medicine, London. 334 pp., illust. \$6.75. Baillière, Tindall & Cox, London, The Macmillan Co. of Canada Ltd., Toronto, 1949.

This book is based on the author's experience in teaching the subject in London to postgraduate medical students studying for the Diploma in Tropical Medicine and similar qualifications. It is in consequence a combination of a class textbook and a laboratory handbook. While it considers, in general terms the host-parasite relationship, and describes the lesions caused by the pathogenic protozoa, it is basically concerned with the parasite, its biology, bionomics, distribution, and so on. No attempt is made to present a clinical handbook and there is no discussion of therapeutics. There is an introductory section dealing with theoretical aspects of the subject (including a synopsis of the rules of nomenclature) and there is a final section dealing with the more fundamental laboratory methods used in diagnosis and cultivation of protozoa. The main section of the volume, however, is concerned with a systematic account of these organisms—pathogenic and non-pathogenic. The volume is well and authoritatively written by one of the world's leading protozoologists, it is adequate in the detail it presents to the student, it is well produced and should form an invaluable assistance to those medical men—and their number is increasing daily—who are compelled to supplement their undergraduate experience of disease organisms, with accurate and reliable information on other forms which are forcing themselves on their attention with increasing frequency.

**Community Health Organization.** I. V. Hiscock, Chairman, Department of Public Health, Yale University. 278 pp. 4th ed. \$2.75. The Commonwealth Fund, New York, 1950.

The material in this book gives a description of community health organization and practices in the United States of appraisals of the health situation and of standards for the control of certain specific diseases. As marked fundamental differences between the organization and administration of public health and preventive medicine exist in Canada compared to the United States, the material presented in this book is unlikely to create a wide interest among workers or teachers in public health and preventive medicine in this country.

**Sight, Light and Efficiency.** H. C. Weston, Director of Group for Research in Occupational Optics and Secretary of the Vision Committee, Medical Research Council. 332 pp., illust. 42s. H. K. Lewis & Co. Ltd., London, 1949.

This book covers a wide variety of subjects, including the anatomy and physiology of vision, causes and symptoms of eye strain, occupational demands upon sight, plant lighting in relation to visual efficiency with a chapter on luminance and colour in the work environment. Various methods of testing vision are discussed, and a chapter is devoted to Protective Equipment. The book has been written from an essentially practical standpoint. The author's aim has been to give a sufficient account of the subjects involved to bring out the principles, and some of the techniques, of a system of management of occupational sight and sights. In doing this he has utilized the results of recent topical scientific investigations, chiefly those made under the



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ægis of the Medical Research Council and the Department of Scientific and Industrial Research in Great Britain. The subject of vision in its relation to work efficiency is one which, in the past, has received too little attention. The appearance of this volume is timely, and it should be included in the library of all physicians engaged in industrial practice. It is also recommended to the attention of industrial relations personnel and engineers, particularly those engaged in the planning and lay-out of factory buildings.

**Syphilis: Its Course and Management.** E. W. Thomas, Professor of Clinical Medicine, New York University College of Medicine. 317 pp., illust. \$5.50. The Macmillan Co., New York and Toronto, 1949.

This book is a real contribution that the student, general practitioner and the specialist will appreciate. To quote the author: "This book does not pretend to be a complete text on syphilis . . . my purpose is not to add to the already voluminous literature describing syphilis but to provide as much understanding of the various stages of the disease as our present knowledge permits, and to outline principles of treatment." In this Dr. Thomas has ably succeeded. The book presents a concise review of the disease in all its phases and gives in detail the reasons behind the changes that have taken place in anti-luetic therapy, in both the early and late stages of syphilis. Many of the controversial issues in the disease have been "by-passed" but not "glossed over". The problems of therapy are presented not only with regard to experiences in the past, but the author takes into account changes that are taking place from day to day and presents interesting speculations as to what may happen in the future. Dr. Theodore Bauer, Chief of the Venereal Disease Division of the United States Public Health Service, in a supplementary chapter has ably summed up the situation in regard to public health aspects of the disease.

**Pathology of Articular and Spinal Diseases.** D. H. Collins, Reader in Clinical Pathology in the University of Leeds. 331 pp., illust. \$6.75. Edward Arnold & Co., London, The Macmillan Co. of Canada Ltd., Toronto, 1949.

This new book will appeal to clinicians and pathologists alike. The subject matter is clearly presented and the field is well covered. There is an abundance of well chosen original illustrations. Besides the chapters on the various diseases of the joints and the spine, there is a short review of bone diseases, and there are chapters on the anatomy and embryology of the joints and the histology and physiology of bone, cartilage, synovial tissues and joint fluid. There are short sections on the endocrine factors in gout, rheumatic fever and rheumatoid arthritis. The references at the end of each chapter indicate this book is up to date.

**Epidemiology in Country Practice.** W. N. Pickles, Medical Officer of Health, Aysgarth Rural District. 112 pp., illust. \$2.00. John Wright & Sons Ltd., Bristol, 1939, re-issued 1949. The Macmillan Co. of Canada, Toronto.

This very readable little book was first published in 1939. Its entire stock and type were destroyed by enemy action in 1941 and in response to numerous appeals it has been re-issued in 1949. As the author states, the object of this book is primarily an attempt to stimulate country doctors to keep records of epidemic disease and to put before them the unique advantages that their position gives them. A technique is described for recording epidemic diseases on charts. Most of the common infectious diseases are discussed from an epidemiological point of view with observations on the infectious and incubation periods. The relationship of chicken pox to shingles is brought out very clearly from epidemiological data. The studies on epidemic myalgia and catarrhal jaundice are examples of opportunities for research in an isolated country general practice.

**Research in Medical Science.** Edited by D. E. Green and W. E. Knox. 492 pp. The Macmillan Co. of Canada, Ltd., Toronto, 1950.

This book is a collection of short essays covering 26 specialized fields in medical research. Each of these, written by an authority on the subject, attempts to convey an over all picture of the current situation in the particular field. As might be expected, there is a certain amount of over-simplification and some dogmatism, but, on the whole, the subjects are carefully and readably presented. The only question that might be asked is who is to read the book. Undoubtedly, research workers in any one field should be familiar with the general picture in other aspects of research, but there are review journals which do this very well. Similarly, practitioners of medicine can obtain review articles written specially for their needs. On the other hand, this book would be almost incomprehensible to the lay public. Perhaps the best summary would be to state that here is an interesting summary of medical research to date in certain fields—well worth reading as an over all review of the subject.

**Methods in Medical Research.** J. H. Comroe, Jr., Editor-in-Chief. 361 pp., illust. \$6.50. Vol. II. The Year Book Publishers Inc., Chicago, 1950.

This is the second volume in a new series concerning methods in medical research. It carries out the promise of the first volume that the series would serve as a highly useful laboratory tool. As source reference books these volumes should become standard in all research laboratories. They contain up to date appraisals of the major current procedures and full descriptions of methods applicable to the various fields discussed. Not only are the methods themselves described fully, but the neat little tricks and bits of "know-how" that actually make them work are carefully added. For the most part, too, these methods are not described second hand as a remake of the literature, but first hand by highly competent workers who have helped develop or modify them, or who have had direct experience with them.

This volume deals with methods used for study of bacterial viruses, for the assessment of pulmonary function and for the assay of hormones—all much used research techniques.

**The Sulfonamides.** F. Hawking, The National Institute for Medical Research, London, and J. Stewart Lawrence, Physician-in-charge of the Walkden Clinic. 389 pp., illust. 42s. net. H. K. Lewis & Co. Ltd., London, W.C.1, 1950.

Fourteen years have elapsed since the sulfonamides were introduced, marking one of the great revolutionary discoveries in chemotherapy. The main implications of this group of agents have now been established broadly and the time has been reached for taking stock and codifying our knowledge in this particular. This volume accomplishes that task with thoroughness, clarity and balance. The chemistry, mode of action and pharmacology of the sulfonamides are fully set out. Nearly half of the text is devoted to the therapeutic action of the various agents and their applicability to various infections. There is an exhaustive bibliography.

The great virtue of the book is that it brings into ready compass the vast literature that has grown up in this field and has been dispersed in the multitude of medical periodicals. Such a survey and compilation make this an invaluable reference book which will be a boon to every medical library. Particular mention should be made of the complete list of the sulfonamides which have been put forward for clinical use, the discussion of the phenomenon of acquired resistance of bacteria, and the excellent discussion of the toxic reactions caused by the sulfonamides. It is a matter of more than ordinary interest to acknowledge in this book the full record of one of the major achievements of modern medicine. The volume as one would expect from the House of Lewis is an excellent piece of book-making.

Continued on Page 31



## Books Received

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Books are acknowledged as received, but in some cases reviews will also be made in later issues.

**Biological Studies with Polonium, Radium, and Plutonium.** Edited by R. M. Fink, Associate Clinical Professor of Physiological Chemistry, School of Medicine, University of California at Los Angeles; Research Chemist, Birmingham Veterans' Administration Hospital, Van Nuys, California. 411 pp., illust. \$4.55. McGraw-Hill Book Company, Inc., New York, Toronto, London, 1950.

**Handbook of Surgical Urology for Interns, Hospital Corpsmen and Nurses.** N. F. Ockerblad, Professor of Clinical Urology, University of Kansas School of Medicine; Senior Attending Urologist to St. Luke's Hospital, Consultant to the Children's Mercy Hospital, Kansas City, Missouri. 189 pp., illust. \$3.50. The Williams & Wilkins Company, Baltimore, 1949.

**Amputation Prosthetic Service.** E. H. Daniel, Director of Prosthetic Service, Institute of Physical Medicine and Rehabilitation, New York University, Bellevue Medical Centre, Prosthetic Consultant to: Bellevue City, Goldwater Memorial, Metropolitan and University Hospitals, New York. Foreword by Howard A. Rusk, Professor and Chairman of the Department of Physical Medicine and Rehabilitation, New York University College of Medicine. 327 pp., illust. \$7.75. The Williams & Wilkins Company, Baltimore, 1950.

**Transactions of the American Goltre Association.** 1949, Annual Session, May 26, 27, 28, Hotel Loraine, Madison, Wisconsin. 460 pp., illust. \$12.50. Charles C. Thomas, Publisher, Springfield, Illinois, U.S.A.

**A Study of Diphtheria in Two Areas of Great Britain with Special Reference to the Antitoxin Concentration of the Serum of Inoculated and Non-inoculated Patients and Other Persons; and the Relation of this to the Incidence, Type, and Severity of the Disease.** By P. Hartley, formerly Director of Biological Standards, Medical Research Council, M. Anderson, formerly Resident Medical Officer, Sheriff Hill Isolation Hospital, Gateshead, J. Grant, Medical Officer of Health and Medical Superintendent, Sheriff Hill Isolation Hospital, Gateshead; etc. 162 pp. 4s. net. His Majesty's Stationery Office, London, 1950.

**Primary Carcinoma of the Vagina.** R. G. Livingstone, Formerly Member Resident Staff Gynecological Division, Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York City. 73 pp. \$2.75. Charles C. Thomas, Publisher, Springfield, Illinois. The Ryerson Press, Toronto, 1950.

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## NEW BRITISH BOOKS FOR SURGEONS

### THE CLOSED TREATMENT OF COMMON FRACTURES

By John Charnley, B.Sc., M.B., F.R.C.S.,  
Orthopaedic Surgeon, Manchester Royal  
Infirmary. \$6.75.

The author attempts in this well illustrated new book to re-emphasize the non-operative method, and to show that far from being a crude and uncertain art, the manipulative treatment of fractures can be resolved into something of a science.

### THE HINGE GRAFT

By Arnold K. Henry, M.B., M.Ch.,  
F.R.C.S.I., Emeritus Professor of Clinical  
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### New Books

#### THE SEXUAL CRIMINAL

By J. Paul De River, criminal psychiatrist and sexologist, Los Angeles Police Department. Containing forty-three real case histories, this book is intended for the medical and legal professions and for teachers of sociology and criminology. 304 pages, 44 illustrations, 1949, \$6.50.

#### BONE AND JOINT DISEASES

By J. Vernon Luck, University of Southern California. No other textbook in English presents the pathology of bone and joint diseases and at the same time correlates the pathologic anatomy with roentgenologic and clinical findings. 640 pages, 703 illustrations, 1950, \$19.75.

#### GEORGE R. MINOT SYMPOSIUM of HEMATOLOGY

Edited by William Dameshek and F. H. L. Taylor. A series of articles on the blood written to celebrate the achievements of George Richards Minot. They begin with one on pernicious anemia, whose treatment brought Dr. Minot his greatest renown. 1008 pages, 267 illustrations, 1949, \$14.50.

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References: in the case of a journal arrange as follows: author (JONES, A. B.), title, journal, volume, page, year. In the case of a book: WILSON, A., Practice of Medicine, Macmillan, London, 1st ed., p. 120, 1922.

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**NOTICE.—INTERNSHIPS IN ANÆSTHESIA.** There are two vacancies for internship in the Department of Anæsthesia, Royal Victoria Hospital, Montreal. One year of approved general internship is a pre-requisite. Term of service either one or two years from the date of appointment. Salary and maintenance. A wide experience in the various anæsthetic techniques is afforded. State earliest date available. Address applications to: The Superintendent, Royal Victoria Hospital, Montreal 2.

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Continued on page 34

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Gastro-enterology, Two Weeks, starting October 16.

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## Books Received

Continued from Page 31

**Oral and Facial Cancer.** B. G. Sarnat, Professor and Head of the Department of Oral and Maxillofacial Surgery, College of Dentistry, University of Illinois, Chicago; Isaac Schour, Coordinator of Cancer Instruction, Professor and Head of the Department of Histology, University of Illinois College of Dentistry, Chicago. 300 pp., illust. \$6.00. The Year Book Publishers, Inc., 200 East Illinois Street, Chicago, 1950.

**The Practice of Medicine.** J. C. Meakins, Formerly Professor of Medicine and Director of the Department of Medicine, McGill University; Formerly Physician-in-Chief, Royal Victoria Hospital, Montreal; Formerly Professor of Therapeutics and Clinical Medicine, University of Edinburgh. 1,558 pp., illust. \$15.50, 5th ed. The C. V. Mosby Company, St. Louis, 1950. Canadian Agents: McAlinsh & Co. Limited, Toronto.

**Nutrition in Ophthalmology.** J. J. Stern. 137 pp. \$1.50. The National Vitamin Foundation Incorporated, 150 Broadway, New York 7, New York, 1950.

**Currents in Nutrition.** Bertha, Burke, William J. Darby, etc. 128 pp. \$1.00. The National Vitamin Foundation Incorporated, 150 Broadway, New York 7, New York, 1950.

**Canadian Sales and Excise Tax Guide.** 194 pp. \$2.00. C. C. H. Canadian Limited, Publishers of topical law reports, 411 Transportation Bldg., Montreal, P.Q.

**Pathologieche Physiologie.** Professor Dr. F. Grosse-Brockhoff, Oberarzt an der medizinischen universitäts-klinik Bonn. 645 pp., ill. DM 1.60. Berlin W 35 Springer-verlag, 1950.

**Williams Withering of Birmingham.** T. W. Peck, K. D. Wilkin-son. 239 pp., illust. \$4.00. Bristol: John Wright & Sons Ltd. London: Simkin Marshall Ltd. The Macmillan Company of Canada Ltd., Toronto, 1950.

**Malignant Disease and Its Treatment by Radium.** Sir Stafford Cade, Surgeon, Westminster Hospital; Consulting Surgeon, Mount Vernon Hospital and Radium Institute. Vol. 3, 2nd ed. 446 pp., illust. \$10.00. Bristol: John Wright & Sons Ltd. London: Simkin Marshall Ltd. The Macmillan Company of Canada Ltd., Toronto, 1950.

**Infrared Radiation Therapy Sources and Their Analysis with Scanner.** L. Rovner, Consulting Physicist, Cambridge, Massachusetts. 34 pp., illust. \$2.25. Charles C. Thomas, Publisher, Springfield, Illinois. The Ryerson Press, Toronto, 1950.

**Simmond's Disease, Extreme Insufficiency of the Adenohypophysis.** R. F. Farquarson, Professor of Medicine and the Head of the Department, University of Toronto. Physician-in-Chief, Toronto General Hospital, Toronto, Canada. 93 pp. \$2.75. The Ryerson Press, Toronto, 1950.

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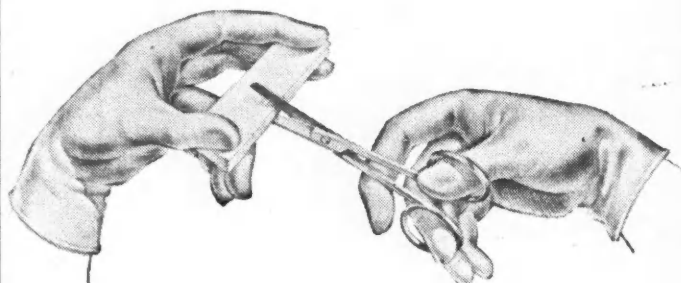
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**Clinical Uses of Intravenous Procaine.** D. J. Graubard, Assistant Visiting Surgeon Cumberland Hospital, New York, and M. C. Peterson, Visiting Anaesthesiologist, Research Hospital, Kansas City, Missouri. 104 pp., illust. \$3.00. Charles C. Thomas, Publisher, Springfield, Illinois. The Ryerson Press, Toronto, 1950.

**Human Milk.** S. K. Kon and E. H. Mawson. 187 pp., 4s. net. London: His Majesty's Stationery Office, 1950.

**Some Relations Between Vision and Audition.** J. D. Harris, Head, Sound Section U.S. Naval Medical Research Laboratory New London, Connecticut. 56 pp. \$2.00. Charles C. Thomas, Publisher, Springfield, Illinois. The Ryerson Press, Toronto, 1950.

**Management of the Patient with Severe Bronchial Asthma.** M. S. Segal, Assistant Professor in Medicine, Tufts College Medical School. 158 pp., illust. \$4.50. Charles C. Thomas, Publisher, Springfield, Illinois. The Ryerson Press, Toronto, 1950.

**The Physiology of Tissues and Organs.** D. H. K. Lee, Professor of Physiological Climatology, The Johns Hopkins University, Baltimore, Maryland. 159 pp., illust. \$4.75. Charles C. Thomas, Publisher, Springfield, Illinois. The Ryerson Press, Toronto, 1950.

**Supervoltage Roentgentherapy.** F. Buschke, S. T. Cantrill, H. M. Parker. 297 pp., illust. \$12.50. Charles C. Thomas, Publisher, Springfield, Illinois. The Ryerson Press, Toronto, 1950.

**Non-gonococcal Urethritis.** A. H. Harkness, Joint Director of the Endell Street Clinic, St. Peter's and St. Paul's Hospitals (Institute of Urology). 424 pp., illust. \$10.00. Edinburgh, E. & S. Livingstone Ltd., 16 and 17 Teviot Place. The Macmillan Company of Canada Ltd., Toronto, 1950.

**Medical Jurisprudence and Toxicology.** J. Glaister, Regius Professor of Forensic Medicine, University of Glasgow. 755 pp., illust. \$675. 9th ed. Edinburgh, E. & S. Livingstone Ltd. The Macmillan Company of Canada Ltd., Toronto, 1950.

**Cytological Diagnosis of Lung Cancer.** S. M. Farber, M. Rosenthal, E. F. Alston, M. A. Benioff, A. K. McGrath, From the University of California Medical Service. 79 pp., illust. \$7.25. Charles C. Thomas, Publisher, Springfield, Illinois. The Ryerson Press, Toronto, 1950.

**Modern Practice in Dermatology—1950.** Edited by G. B. Mitchell-Heggs, Physician-in-charge Skin Department, St. Mary's Hospital and Medical School, London. 336 pp., illust. London Butterworth & Co. Ltd., 1950.

**The Mask of Sanity.** H. Cleckly, Professor of Psychiatry and Neurology, University of Georgia School of Medicine, Augusta, Georgia. 569 pp. 2nd ed. \$7.50. C. V. Mosby Company, St. Louis, Mo. McAinsh & Co. Ltd., Toronto, 1950.

**The Cerebral Circulation in Health and Disease.** C. F. Schmidt, Laboratory of Pharmacology, University of Pennsylvania, Philadelphia. 78 pp. \$2.75. Charles C. Thomas, Publisher, Springfield, Illinois. The Ryerson Press, Toronto, 1950.

**Researches on the Measurement of Human Performance.** N. H. Mackworth. 156 pp., illust. Medical Research Council special report series. London: His Majesty's Stationery Office, 1950.

**Industrial Health.** R. Passmore, Lecturer in Physiology, University of Edinburgh, C. N. Swanson, Lecturer in Industrial Health. 110 pp., illust. \$90. Edinburgh, E. & S. Livingstone Ltd. The Macmillan Company of Canada Ltd., Toronto, 1950.

**A Histology of the Body Tissues.** M. Gillison, Lecturer in Physiology at the I. M. Marsh College of Physical Education, Liverpool. 220 pp., illust. \$2.85. Edinburgh, E. & S. Livingstone Ltd. The Macmillan Company of Canada Ltd., 1950.

**Clinical Examination of Patients.** J. Forbes, Physician to the Wrexham Hospitals, W. N. Mann, Assistant Physician to Guy's Hospital. 323 pp., illust. \$3.50. London, Edward Arnold & Co. The Macmillan Company of Canada Ltd., Toronto, 1950.

**The Breast.** E. D. Saner, Surgeon, Royal Northern Hospital. 316 pp., illust. \$8.50. Bristol: John Wright and Sons Ltd. London: Simkin Marshall Ltd. The Macmillan Company of Canada Ltd., Toronto, 1950.

**The Hinge Graft or Ginglymus Implant.** A. K. Henry, Professor of Anatomy in the Royal College of Surgeons, Ireland. 64 pp., illust. \$2.85. Edinburgh, E. & S. Livingstone Ltd. The Macmillan Co. of Canada Ltd., Toronto, 1950.

**Emergency Surgery.** H. Bailey, Surgeon and Surgeon-in-charge of the Genito-urinary Department, Royal Northern Hospital, London. 556 pp., illust. Part Three, 6th ed. Bristol: John Wright and Sons Ltd. London: Simkin Marshall Ltd. The Macmillan Co. of Canada Ltd., Toronto, 1950.

**British Surgical Practice.** Edited by Sir Ernest Rock Carling, Consulting Surgeon, Westminster Hospital, and Sir James Paterson Ross, Professor of Surgery, University of London. Vol. 7. 591 pp., illust. London: Butterworth & Co. Ltd., 1950.

**Human Sterilization.** R. L. Dickinson and C. J. Gamble. 40 pp. Sterilization for Human Betterment, 134 Nassau Street, Princeton, N.J., 1950.

**Tissue Culture Technique.** G. Cameron, Department of Biology Washington Square College, New York University. 191 pp., illust. \$4.20. Academic Press Inc. Publishers, New York, 1950.